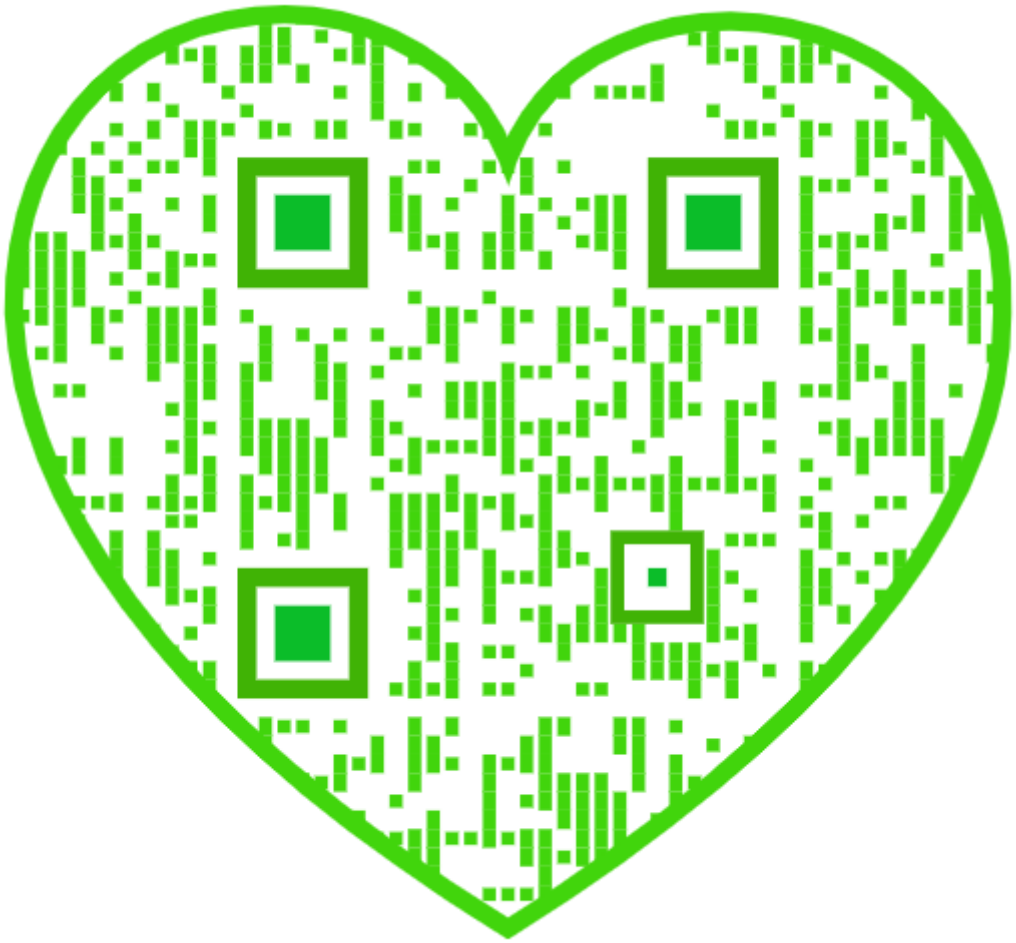

HENRY P. WELLS.

HENRY PARKHURST WELLS, successful lawyer, enthusiastic angler and outdoor man and graceful writer, died November 20 at his home in Brooklyn, N. Y., after a long illness.

Mr. Wells was born in Providence, R. I., in 1842. He was a graduate of Amherst College, and a soldier in the Civil War. He was admitted to the New York bar in 1869, and to the bar of the United States Supreme Court in 1883.

Mr. Wells was one of the most ardent lovers of outdoor life, and not satisfied with enjoying this himself, desired to share his pleasures with others, and to give them the benefit of his long experience and his keen observation. His manual of "Fly-Rods and Fly-Tackle" has had a wide circulation, and his other books, "American Salmon Fisherman," and "City Boys in the Woods," were not only charming in themselves, but appealed strongly to the popular taste. Mr. Wells was a long time correspondent of FOREST AND STREAM, to which he contributed many articles on angling, in one series of which were detailed his experiments on the sight of fishes.

Personally Mr. Wells was a most attractive man, a ready and entertaining talker, and possessed of keen and almost boyish enthusiasms. He was a delightful companion, and will be sadly missed by a large number of old-time anglers. F&S. Nov. 26. 1904.

F.&S. Dec. 3, '04

We are glad to have the appreciation of Henry P. Wells, written by Mr. Hyde. It voices the feelings of a large circle of friends and angling acquaintances. One quality of Mr. Wells, which must have impressed all who come in contact with him, and a quality which is everywhere manifested in his books on angling, was the thoroughness which led him to investigate to the ultimate attainable factor a difficult problem in mechanics. Mr. Wells was a patent attorney; the work of his profession cultivated his natural bent in this direction; the integrity of a patent might depend on some recondite basic principle, to the complete mastery of which he applied himself with a zest like that which made him the enthusiastic angler playing a salmon. When he came to write his fishing books, this taste—or shall we say passion—for investigation contributed in generous degree to the value of his studies and writings. The preface of the book "Fly-Rods and Fly-Tackle" illustrates this quality of its author in the paragraph telling of his planned study of the conditions under which the fish in the water sees the fly:

> Though these experiments were many in number, that which I regarded as of first importance was the further investigation of how lines, leaders and flies appeared to trout under the varying conditions of light and water which confront the angler when rod in hand. It is not my nature to be content with one experiment when another and a more conclusive method of investigation suggests itself. My plan was to procure a diver's outfit, together with the necessary skilled assistance, and at various depths beneath the surface of the water, and over light and dark colored bottoms, and in sunshine and shadow, myself impersonate a fish while a friend angled for me, as it were. Thus, and with aid of telephonic communication and a stenographer, I hoped in two or three weeks' time to make quite an impression on the problem.

Henry P. Wells.

NEW YORK, Nov. 25.—*Editor Forest and Stream:* It was with the keenest regret that I saw the announcement of the death of Mr. Henry P. Wells in your issue of this week. Appreciative as your note was, it does not do him adequate justice.

I knew Mr. Wells well for the last twenty years, and I believe no one will have a greater or better influence than he on the angling fraternity—old boys and young boys, we are all alike—for the next twenty years. What influence he has had is history.

Mr. Wells' predominant traits were modesty, thoroughness, geniality, and generosity; and combined with these were a good knowledge of mechanics, of natural science, of literary art, and a willingness to impart his knowledge to others. Above all, he was an angler.

Whether it was at the side of a salmon river, wading a trout brook, on a lake in Maine, or sitting in front of the blazing logs in his beloved camp of the Parmachenee Club on the island in Parmachenee Lake, he was always the same—genial, modest, of a kindly but keen wit, ever ready to suggest when asked, but never intruding.

His books are a fair picture of the man, for unlike many writers, he did not try to keep his knowledge for publication only.

Two instances occur to me. A young amateur once said to him that he thought that he had made an improvement on the Parmachence-belle, a fly which, as we all know, was born of Mr. Wells' fancy, which is famous throughout the world, and which was, therefore, naturally a source of modest pride to its inventor. I expected at least a demur, but the answer was a very quiet "very likely." Another time he was shown a cheap bamboo rod which the owner had reinforced by extra windings of silk, and by adding extra line rings. We all know what cheap tackle is, but Wells tried the rod and then handed it back with a hearty "I like the action better than that of my $70 rod of ——," naming a maker other than himself.

His books are a storehouse of practical information such as the angler wants, and they have the added charm of a literary style peculiarly their own; natural, unaffected and straight to the point.

Attractive to both men and women, listened to with great respect by all, I feel sure that there are many who will feel his loss as I do, and among them notably John S. Danforth. Dec 3. '04. J. E. HINDON HYDE.

THE LANDING.

A. N. Cheney
from his friend

THE AMERICAN SALMON FISHERMAN

By HENRY P. WELLS
AUTHOR OF "FLY-RODS AND FLY-TACKLE"

ILLUSTRATED

NEW YORK
HARPER & BROTHERS, FRANKLIN SQUARE
1886

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INTRODUCTION.

SALMON-FISHING is to trout-fishing as is a father to his son. Though the stature and avoirdupois of the one may exceed that of the other, the relationship is notwithstanding none the less near. Apart from the immaterial difference of size, the appliances for salmon-fishing, the gaff excepted, are the appliances for trout-fishing. Alike as they are in material, alike in method of manufacture, and alike in that their adaptability to the end in view depends on the more or less perfect embodiment of the same principles of construction, it has been thought unnecessary to touch upon this branch of our subject in other than the briefest possible manner. As the lawyer refers in his bill of complaint to his documentary exhibits, and by that reference incorporates them in and makes them part of his plea, so I refer to my former volume, "Fly-Rods and Fly-Tackle," and make it part of this. The origin and quality of the crude materials, the methods by which they are converted into the finished article, the principles which should govern that conversion, and the comparative degree of excellence which each material and method affords, are therein considered at length. To review would be but to repeat.

As in that book, so in this it is to the novice that I especially address myself. Though it is hoped that the expert may find in the following pages matter not unworthy of his consideration, still it is those that seek, rather than those who have already found, whom I aspire to direct.

For the labor expended on this volume, I desire no more grateful reward than the same kindly reception which has been the good-fortune of its predecessor.

HENRY P. WELLS.

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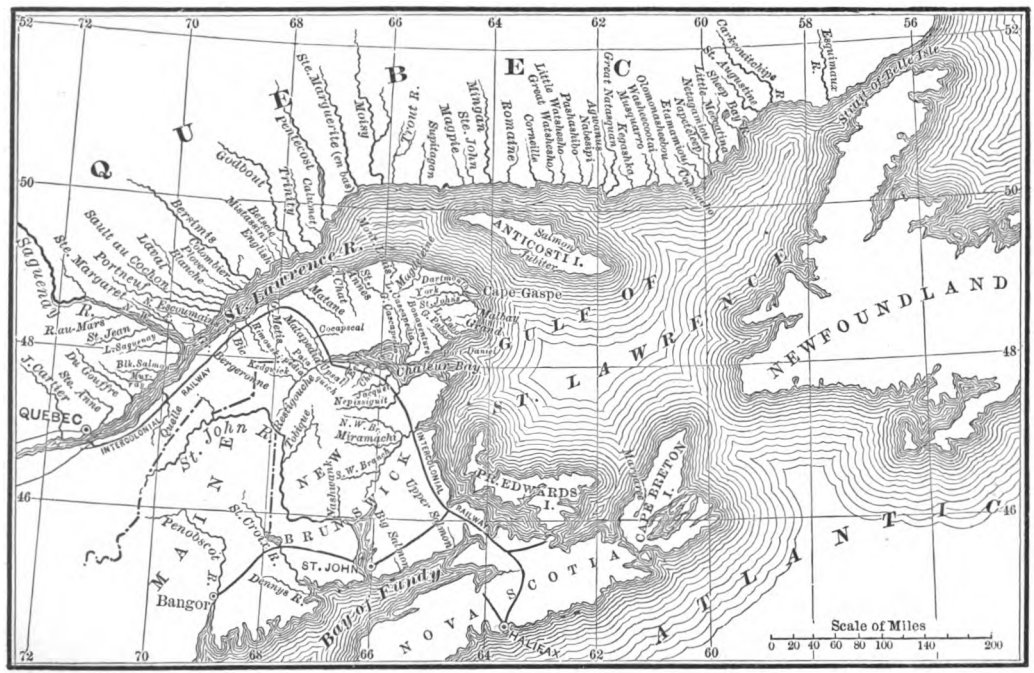

MAP SHOWING LOCATION OF THE SALMON RIVERS OF CANADA.

THE AMERICAN SALMON-FISHERMAN.

CHAPTER I.

HOW AND WHERE SALMON-FISHING MAY BE OBTAINED.

THAT where there was one fly-fisherman in the United States ten years ago there are ten now, is a general and perhaps unexaggerated belief. He who is interested in and familiar with an art almost necessarily looks above and beyond the level he may have attained, and aspires to the highest development in it of which he may have knowledge. Especially is this so in regard to fly-fishing. Its practice is begun with indifference—oftentimes out of mere good-fellowship, and to calm the missionary zeal of some persistent friend. But it is followed with an enjoyment which, should opportunity serve, speedily ripens into enthusiasm, and he who was but recently a less than lukewarm acolyte is now a zealot. Such was the experience of the writer, and such has been the experience of many of his friends. Expose the proper temperament to the contagion and the disease surely follows, and the mental constitution undergoes a permanent and indelible modification as the result. Recreation must thereafter be sought rod in hand, and face to face with nature.

May this disease,—if disease it may be called,—every

moment of which is fraught with health and happiness, become epidemic among my countrymen!

We may safely, assume then, that every fly-fisherman hopes and aspires some day to try his skill against the salmon, since all admit that to be the crowning delight of angling, and its highest development.

But two formidable obstacles confront the American angler at the outset of his career as a salmon-fisherman. As dollars do not grow on every bush, so salmon are not to be found in every river. He neither knows where nor how to obtain the opportunity; or, having secured that, he does not know what to do with the opportunity when it is had.

Discouraged by these considerations, many view salmon-fishing in about the same light as hippotamus-hunting on the head-waters of the Congo—as something in which they would dearly love to take part, but which is so distant and unattainable as to lie beyond reasonable hope.

It is the purpose of this book to remove these obstacles from the path of the many who need information, rather than to advise or instruct the fortunate few who already have the lamp of experience to guide their steps.

The opportunity for salmon-fishing is a mere question of leisure time and dollars and cents. I am well aware of that law of civilized nature which ordains that if you have the money you shall not have the time, and that if you have the time you shall not have the money. But there are many exceptions to this rule, and is it not to force our way into this charmed circle that we rise and renew the bitter struggle of life each morning, and the "daily contact with the things we loathe"? Nor is

salmon-fishing so expensive as to be beyond the means of any man of moderate income, provided he is not overburdened with dependants—especially if he will keep a passably watchful eye on his pleasure-expense account during the remainder of the year.

While upon the subject, it is as well at once to dispose of the question of expense. It may be considered as composed of four elements; i.e., travelling expenses, cost of fishing-right, guide and boat hire, and living expenses.

The first—travelling expenses—is of course a variable quantity, dependent on distance and other conditions; and while its amount cannot be computed till both the point of departure and destination are known, after that it is readily ascertainable.

The cost of the fishing-privilege also varies with circumstances, and from a dollar a day up to twenty-five dollars a week for each rod. The latter should command a position on a really first-class river, where fish are not only abundant, but also large. A higher demand than this is generally considered extortionate, unless coupled with very unusual advantages outside of the mere fishing-right. These, too, are the prices asked for "casual" rods —those who come, remain but a few days, and depart. The angler who wishes the water for two or three weeks or a month can usually obtain better terms, since he is a more desirable customer—especially if he is one of a party sufficient in number to occupy the entire fishing in negotiation. Then the offer of a lump sum for the exclusive use of the water during a fixed period will generally secure it, so that the proportion to be contributed by each rod will fall considerably below the rate for "casuals."

The hire of men and canoes depends on the inaccessi-

bility of the river—in short, on demand and supply. It ought not anywhere to exceed two dollars and a half a day if the angler feeds the men, and three dollars if they feed themselves. Each angler will usually require a canoe and two men to himself, the entire expense of which is included in the preceding estimate. Since the Great Eastern has ceased to plough the wave, many think there is no vessel now afloat large enough to give room for unembarrassed action to two fly-fishermen when actually on the war-path. But however this may be in trout-fishing, where salmon are in question a free field is absolutely indispensable. I was about to say "a free field and no favor"—giving the quotation in full which suggested the phrase. But in so doing I should mislead. The salmon-fisher who would also be a salmon-catcher not only needs favor, but all the favors that a kind Providence will bestow. Even then victory will all too often plunge beneath the rushing water in the wake of the salmon's tail instead of perching upon the rod, though its owner woo her with every resource of his art. If the fishing is from the bank, one attendant is enough; but if from canoe, the angler will absolutely require a boat to himself and two men to handle it.

The amount to be allowed for living expenses will depend on whether the angler camps, or boards at some convenient hotel or farm-house. The quantity and quality of his drink and smoke will be a not unimportant factor as well. But leaving this element for each to measure for himself, the cost of living in any hotel in the fishing-country will not exceed two dollars a day. At a farm-house, or in camp, it should be less.

When Lord Ashburton worsted us in the determination

of our northern boundary and pushed the line so far south of the St. Lawrence, he left us few salmon-rivers on our Atlantic seaboard. What is done, is done, and it is too late to remedy that now; but whenever we look at the map it is difficult to repress a sigh of regret that our commissioners were not salmon-fishermen.

In the last century salmon swarmed in every river on our coast, at least as far south as the Connecticut. They have disappeared. It would be well were it thoroughly and widely understood that a river once thus depleted remains forever barren, unless man intervenes and restocks it by patient, protracted, and persevering effort. Nature has implanted within the salmon an impulse to breed in the river where it was itself bred, and in no other. When an artificial barrier closes the ascent of a stream they still return until they die. But their spawn, necessarily cast in localities unsuited to its development, perish. No other generation succeeds that in existence when the obstacle was created, and the river once swarming with fish speedily becomes barren. And so it will remain, even though the original conditions be restored, until a new race is introduced by man.

Since salmon obtain their growth in the sea and lose rather than gain in fresh water, it would seem as if all rivers ought to furnish fish of approximately the same size. Such is not the fact. In some rivers, excluding extremes as it seems to me should always be done in such cases, the fish will run about ten or twelve pounds in weight, and a fish of eighteen pounds will be a rare prize. In other rivers no larger, and in the immediate neighborhood of the others, the fish may average twenty pounds and over, and fish of forty pounds be as common as fish

of eighteen pounds in the rivers first alluded to. This difference is not a casual affair of a single season, but a permanent characteristic of each river. A satisfactory reason for this which will not conflict with what are supposed to be settled facts, I have yet to hear. Is it because the various clans of fish which converge to their native rivers when leaving the sea, diverge on their departure to distinct and distant parts of the ocean where the conditions favorable to growth vary? This seems difficult to reconcile with the theory that they linger throughout their ocean-life near the mouth of their native rivers. Or is it possible that the universally accepted belief that salmon always return to the river of their youth needs further investigation; and that they really so return only until they have attained a certain size, and then go elsewhere?

I can suggest the question, but not its solution.

The Penobscot, St. Croix, and Dennys River, all in Maine, afford some fly-fishing for salmon. Over fifty salmon were thus taken at Calais, Milltown, and Barings, on the St. Croix, last year. Mr. E. M. Stillwell, one of the Maine Fish Commissioners, writes me: "A charming summer trip could be made by canoe from Vanceborough, on the European Railroad, down the St. Croix to Barings, Milltown, and Calais. We think good fishing [salmon] could be had on the route."

Dennys River is a fine natural stream, but much obstructed with nets, drift trash from saw-mills, and other abominations. It is worth bearing in mind, since these abuses will doubtless soon be brought to an end. Then this river will be well worthy the attention of the angler.

The Penobscot, if thoroughly exploited, would, we have no doubt, rank well as a salmon-river. This stream is a whole sermon by itself on the value of restocking exhausted rivers. It was practically depleted, while now it is quite productive. When a river has been frequented by anglers for many consecutive years, experience has taught where salmon may be expected to lie at each part of the fishing season, and at every stage of the water. In this respect the Penobscot is under a decided disadvantage. It is but very recently that salmon have begun to run there in any number, and the salmon-pools of the river above the dam at Bangor are yet to be located. Mr. Stillwell recommends trial at Medway, seventy-five miles above tide-water, at the junction of the east and west branches of the river; also the Ouissaticook, a very cold stream, rising at Mount Katahdin and discharging into the East Branch—especially where Springs Brook enters on the left side of the stream, about two or three miles below Grand Falls. Medway is twelve miles by stage from Mettawomkeg, on the European Railroad, and the Ouissaticook can be reached from there by canoe. He says, "I have no doubt salmon could now be taken in all these places, and good pools be discovered."

The fishing in the pool below the dam at Bangor was very fair in 1885; and though we hear it was comparatively little fished, and then principally by the inexperienced, still the catch was quite respectable in point of numbers, though the fish ran small, seldom exceeding ten pounds in weight. It must, however, be borne in mind that this was the first year of direct result, as far as the angler is concerned, from restocking a practically exhausted river, and that the salmon of succeeding years

may reasonably be expected to show an increase in size as well as in number. This fishing, though in water affected by the tide, was with the fly, and was most successful in the afternoon and on an ebb-tide. The water is fresh.

Let us now assume that a gentleman bearing the time-honored name of John Doe and three companions—four rods in all, which is large enough for a party—are in quest of salmon-fishing, and let us profit by their example.

Had our friend Mr. John Doe decided to try one of these Maine rivers, he would have written to Mr. Stillwell, at Bangor, as to whom he should engage as attendants, and for such other and further information as he might require. And we have no doubt, since Mr. Stillwell is not only a thorough angler but an enthusiast in matters pertaining to his office, that he would have replied to Mr. Doe's request in that spirit of fellow-feeling which always characterizes the true angler toward his brothers in the art. And had Mr. Doe gone, he would have remembered that the fishing-right cost him nothing, that he was reaping a harvest he had not sown, nor had he borne any part in the great labor and expense of which it was the fruit. He would also remember that though the importance of restocking our depleted waters with fish is daily growing in public appreciation, still the time has not yet come when the needs of the work do not tax its available resources to the elastic limit. He would therefore have thought it graceful, to say the least, to make some pecuniary contribution to further the work on that river in the future.

But sport rather than economy is Mr. Doe's object, and tradition and his own inclination direct him to Canada.

He therefore writes to some advertising agency in his own or some neighboring city, asking which of the newspapers of Montreal, Quebec, or St. John, N. B., circulates most largely among the class likely to own or lease salmon-fishings, and what will be charged to insert the following advertisement therein:

"Wanted, Salmon-Fishing. Address, with particulars, John Doe, P. O. Box X. Y. Z., New York City."

It by no means follows because a man owns a piece of property that therefore he must monopolize its use. Salmon-fishings are no exceptions to this rule. The owner may occupy it but a portion of the season, or ill-health or other causes may prevent him from using it at all. Under such circumstances he may gladly avail himself of the opportunity of deriving an income from his water by turning it over to some other person for the time being.

This advertisement will bring an abundance of answers —answers showing a lofty contempt for particulars, but abounding in glittering generalities, as answers of this description are prone to do. Mr. Doe therefore selects those which appear most promising, and writes to each as follows, making such omissions, modifications, and additions as the information already at hand may require or suggest.

Your answer to my advertisement in the . . . . . has been received. Will you kindly furnish this further information in reference to your fishing?—

1st. Is the fishing from canoe, or from bank?

2d. Is wading advisable or necessary?

3d. Is the water in its normal condition clear or colored?

4th. What is about the average width of the stream at your fishing?

5th. Do you give the right to the entire stream, or but to one side?

6th. How may your fishing be best reached from Montreal (or Quebec, or St. John, N. B., as the case may require)?

7th. Are black-flies, gnats, and mosquitoes an annoyance during (state time of proposed fishing), and to what extent?

8th. What are the living accommodations—camp, farm-house, hotel, or tent? If at farm-house, or hotel, what is the usual daily charge?

9th. How many attendants will each rod require?

10th. Where can they be obtained?

11th. What wages will they require?

12th. Can you place me in communication with good men familiar with your water?

13th. Must we take our own supplies, or any portion of them, except drink and smoke, with us?

14th. If we must take any portion of our supplies with us, where would you advise us to procure them?

15th. What flies, and of what size, would you recommend us to be provided with for the time we propose to fish?

16th. Give weight of the largest fish usually taken with the fly on your water?

17th. Under fairly favorable conditions, what should be the average catch a week for an industrious and tolerably skilled rod in that portion of the season during which we desire to fish?

18th. How many rods will your fishing accommodate without one incommoding the others?

19th. Can and will you name any one in this vicinity who has fished your water?

Now, human nature is weak, and one of its weaknesses is to say as little as possible about the defects, and to dilate freely on the merits of any property in negotiation. Mr. Doe knows how easy it is to overlook what one does not wish to see. He therefore forestalls as far as possible such inadvertence by numbering each question, and making it a paragraph by itself.

To this point the inquirer can with prudence follow in Mr. Doe's footsteps. But beyond this, each case will have its own individuality, and his own judgment and common-sense must be his guide.

One particular will certainly appear in the answer to the advertisement—the price of the fishing. In regard to this, what has been said of "casual" rods should be borne in mind. A party for a definite time, particularly if sufficient in number to fill the fishing, is more desirable than a single individual for an indefinite time. A lump sum in such case may be offered for the exclusive use of the fishing for a fixed period, but not until either by some statement in the answer to the advertisement, or by a direct response to the eighteenth question above, the capacity of the fishing has been first ascertained.

Though, as a usual thing, the dealing will be with a brother angler, and fair and courteous treatment will be the rule, still there are black sheep in every community. An effort may be made by some such rascal to palm off worthless water upon the unsuspecting. If, therefore, no

reference is made by the owner to a disinterested party, or if the would-be lessee has but the correspondence of the lessor to depend on for the quantity and quality of the fishing, the name of the Inspector of Fisheries of the Province should be obtained from some of the many American papers giving attention to angling. The truth of the lessor's allegations can then be verified by reference to him, or to such sources of information as he may indicate.

Whether the advertisement is published in Montreal, Quebec, or St. John, N. B., is immaterial. Either will probably sufficiently answer the purpose. But, of course, the wider the diffusion of the advertisement, the more numerous will be the answers, and the more extended the range of choice. Perhaps, all things considered, it will be best to advertise in St. John, N. B., and one of the other cities named, since then the greater part of the available field will be covered.

In dismissing this branch of our subject it may be well to state that if the visiting angler is worthy of courteous treatment, he may rely on receiving it in Canada. The hog may occasionally be encountered on every soil and in every climate. But English, Scotch, Irish, Canadian, and American anglers are all pretty much alike in hearty good-fellowship toward their brethren in the gentle art, and in the kindness and consideration which they almost invariably extend to him who, through misfortune or ignorance, stands in need of their aid.

A word or two of explanation may not be amiss.

The word "American" will be used throughout this book to indicate the people of the United States. While

in point of fact he who is born anywhere between the Atlantic and the Pacific oceans, and between Lady Franklin Bay and Cape Horn, is really an American, I see that Europeans, by common consent, apply this name distinctively to our own countrymen, and I find that our Canadian neighbors in practice acquiesce therein. It is a name too agreeable to the sentiments with which we regard our country to be either rejected or ignored—at least by me.

If the reader, whom I assume to be a good angler, should meet one equipped for fly-fishing, should salute him with the customary "What luck?" should receive the answer that quite a number had been caught, and should then find the basket filled with nothing but suckers, he might not say much, but he would do some pretty lively thinking not altogether flattering to him of the suckers.

So on a salmon-stream. Though the angler equipped with a salmon-rod be up to his knees in trout, not one of less than five pounds, notwithstanding, unless salmon have rewarded his efforts, he must reply to the usual greeting "What luck?"—"None." Trout are regarded as vermin in a salmon-river—as a source of annoyance, and not of sport.

On a salmon-stream, and in this book, the word "fish" means "salmon." All others are alluded to only by their distinctive names.

LIST OF THE SALMON-RIVERS OF CANADA.

It all the salmon-rivers of Canada from the Straits of Belle Isle to the Jacques Cartier above Quebec, including New Brunswick, are not included in the following list, it is certainly through no lack of conscientious effort to that end on my part. Its preparation was begun some time before a word of this book was written. It is now finished after every other part is in the hands of the printer. Every available source of information has been exhausted in the endeavor to include all rivers which produce salmon, and to exclude all that do not; also to intimate, as far as possible, the condition of each river at the beginning of the season of 1886. Besides remarks, a system of notation has been employed. Three asterisks indicate a river of the first merit, a lesser number those of inferior grade, while the absence of any mark of the kind is intended to convey the meaning that the stream is of little worth. The rivers of Nova Scotia, those flowing into the Bay of Fundy from New Brunswick, and the tributaries of the St. John, are not included in this system of notation, my information not being sufficient to justify me in so doing.

Undoubtedly the efforts of the Dominion Government to restock those streams which have become depleted, and to increase the supply of those which are now productive, will eventually in some measure produce the desired effect. Those who wish well to Canada would, however, feel much more sanguine of this result, if the mouths of at least many of its salmon-rivers were less cruelly netted. Indeed, the casual observer would think any escape impossible from the labyrinths of nets, which, for miles below

the head of the tide and in close proximity to one another, bar the ascent of the salmon to their spawning-grounds. It is true that the law directs that the nets be raised from Saturday evening till Monday morning. How well this law is observed I will not say, but of the many fish I saw which had been taken with the fly on the Restigouche River during June and July, 1885, hardly more than one in ten was free from wounds unmistakably due to the meshes of the nets. Since the efforts of the Government to restock and increase the supply of salmon are paid for from the taxes of the people at large, it would seem to an outsider that they had some claim to consideration, and that the wish—a general wish, as it appeared to me—that the product of this expenditure should be marketed in the dearest rather than in the very cheapest market, and so as to benefit the many rather than the few, was not unreasonable. It would certainly seem that if the netters were compelled to raise their nets for another twenty-four hours during the middle of the week, they would even then have more than the lion's share of the fishing. The netters receive from six to ten cents a pound for the fish at the freezer. The average cost to the angler in money disbursed within the Dominion for every pound he hopes to take—to say nothing of what he really does kill—far exceeds this. The large annual income in ready cash received by the people of the State of Maine from visiting sportsmen, furnishes solid food for thought in this connection.

Should any reader find the following list of value, he should join me in thanking Mr. J. W. Skelton, of Montreal (without whose patient and persistent coöperation

its preparation must have been abandoned in despair), and the Fisheries Branch of the Department of Crown Lands of Canada.

Rivers discharging on the north shore of the St. Lawrence River and Gulf, beginning at the Straits of Belle Isle, and ending at the Saguenay River.

***Esquimaux.*—Very good salmon river, formerly yielding 52,500 lbs. salmon in the season.

***Carkeouitchipe.*—Neighboring stream; steady run of large salmon.

***St. Augustine.*—Well supplied with salmon.

***Sheep Bay.*—Good sized river; good salmon-fishing.

***Little Meccatina.*—Discharges large body of water by several channels; fine salmon-river.

***Netagamiou.*—Large deep stream; high falls two miles from mouth; swarms with salmon and trout; fishing only to the falls.

***Napeteleept.*—Empties into spacious bay; abounds with salmon.

***Etamamiou.*—Celebrated for its salmon fly-fishing.

***Coacoacho.*—Discharges into fine basin; good salmon river.

***Olomonasheebou.*—Large shoal river; salmon abundant, as well as fine white trout.

***Washeecootai.*—Grand salmon fly-fishing at falls.

***Musquarro.*—Rapid river; good fly-fishing.

***Kegashka.*—Salmon plenty; good fly-fishing to great falls.

****Great Natasquan.*—One of the best rivers in the Dominion; great run of very fine large salmon; very rapid stream.

Agwanus.—Fishing for nets only.

Nabesipi.—Large river, nets only.

Pashashiboo.—Net-fishing only.

Little Watshesho.—Small river, much run down.

***Great Watshesho.*—Very fine fly-fishing; large salmon.

**Corneille.*—Good fly-fishing for salmon and trout.

***Romaine.*—Excellent fly-fishing for salmon and white-trout; pools full of salmon; average, 12 to 15 lbs.

***Mingan.*—Pools hold heavy run of large salmon from 15 to 40 lbs.; fishing for four rods.

***Manitou.*—Tributary of Mingan ; equally good.

***St. John.*—Large deep river ; pools begin 25 miles from mouth ; very fine salmon-fishing.

**Magpie.*—Small river ; salmon-fishing for one rod.

Supitagan.—Small stream ; chiefly net-fishing.

**Trout River.*—Fishing for one rod.

****Moisie.*—A noble river ; large salmon, 15 to 50 lbs. ; splendid fly-fishing for a number of rods.

**Ste. Marguerite-en-bas.*— Excellent salmon-stream ; difficult entrance ; both salmon and trout.

Pentecost.—Much run down ; not reliable.

Calumet.—Much run down.

**Trinity.*—Good little river for both salmon and trout. Salmon run from 15 to 30 lbs.

****Godbout.*—A very fine stream ; fish abundant from 15 to 40 lbs. ; trout very plenty.

Betscie.—Much run down.

Mistassini.—Run down ; needs restocking.

English.—Plenty of trout ; not much good for salmon.

**Bersimis.*—Large deep river ; abundance of salmon, 15 to 45 lbs. The main river is too large and deep for fly-fishing. Reserved for Indians.

****Nipimewecawnan.*—Tributary of Bersimis ; good fly-fishing for salmon of from 15 to 45 lbs.

Colombier.—Nets and trout only.

Plover.—Nets and trout only.

Blanche.—Nets and trout only, and run down.

**Laval.*—Fair fishing both for salmon and trout.

Sault au Cochon.—Run down by lumbering. High falls near mouth.

**Portneuf.*—Few salmon and abundance of trout.

Grand Escoumains.—Once very good ; ruined by lumbering.

Great Bergeronne.—A few salmon, abundance of trout.

Rivers discharging into the Saguenay.

***St. Margaret, N. W. Branch.*—Large tributary of Saguenay ; fine fly-fishing for salmon of from 10 to 22 lbs. ; also trout.

***St. Margaret, N. E. Branch.*—Same as preceding.

**Little Saguenay.*—A few salmon 10 to 22 lbs.; and abundance of trout.

**St. Jean River.*—Salmon from 12 to 18 lbs.; restocked last two years.

**River-au-Mars.*—Tributary of Saguenay, owned by Mr. Pierce, who has a registering fish-slide showing the number of fish that pass up each season; has five good pools; salmon 12 to 18 lbs.

Rivers discharging into the St. Lawrence above Saguenay.

Black Salmon.—Formerly good; run down; recently restocked. Small river.

**Murray.*—A few salmon caught each season; recently restocked; salmon large—from 15 to 40 lbs.

Du Gouffre.—Run down; restocked last two years.

**St. Anne.*—Fair salmon-fishing at the chute; 12 to 25 lbs.

***Jacques Cartier.*—Good salmon-fishing, chiefly grilse; salmon early in season from 10 to 15 lbs.; grilse, 2½ to 5 lbs.

Rivers discharging into the St. Lawrence on south side, below Quebec.

Ouelle.—Four mill-dams; fish cannot ascend river; run down.

Bic.—Few salmon taken each season.

**Rimouski.*—Run down; in a rainy season eighty fish have been taken from 15 to 40 lbs.

**Grand Metis.*—Good river; fish from 12 to 45 lbs.

**Matane.*—Large fish. Badly poached. Fish 12 to 30 lbs.

Cape Chat.—Shallow; few salmon taken each season; run down.

***St. Annes.*—Abundance of salmon taken each year; average, 25 lbs.

Mont Lewis.—Few salmon, many trout.

**Magdeleine.*—Good fishing for five miles to falls; salmon large; average, 22 lbs.

Rivers flowing into north shore of Bay Chaleur.

**Dartmouth.*—Good fishing for two rods; 15 to 20 lbs.

*** *York.*—Good river; salmon from 15 to 45 lbs.

***St. John.*—Fine river; plenty salmon and trout; fish large.

Mal Bay.—Run down; restocked last July; lots of trout.

**Grand River.*—Good; about 100 salmon taken each year from 10 to 20 lbs.

**Little Pabos.*—Not very good; fair for trout.

**Grand Pabos.*—Improving; lots of trout, and salmon from 10 to 18 lbs.

Port Daniel.—Not much fished; being restocked.

**Great Bonaventure.*—Good salmon stream. Very clear water. Fish run from 12 to 28 lbs.

**Little Cascapedia.*—Small river, run down; few salmon from 12 to 20 lbs. taken each year. Lots of trout.

****Grand Cascapedia.*—Noble river; abundance of salmon up to 56 lbs.

***Restigouche.*—Very fine salmon-river; fish from 15 to 35 or 40 lbs.

**Upsalquitch.*—Tributary of Restigouche; salmon 10 to 18 lbs.; grilse from 3 to 5 lbs.

**Patapedia.*—Tributary of Restigouche; reserved for the breeding of salmon by the Restigouche Salmon Club.

**Kedgewick.*—Tributary of Restigouche; same as last.

**Metapedia.*—Discharges into Restigouche, near its mouth; large salmon; good fly-fishing.

**Coscapscal.*—Tributary of Metapedia. Same as above.

Rivers discharging into south shore of Bay Chaleur, below Campbellton.

Eel River.—A few salmon; good trout.

Charlot.—Yields yearly a few salmon; good trouting.

**Jacquet.*—Substantially the same; better salmon-river than Charlot.

**Nipissiguit.*—Fine salmon-fishing; abundance of fish at falls. Not very large, 10 to 15 lbs.

**Miramichi.*—Very much run down; formerly good.

Branches of N. W. Branch of *Miramichi:*

Little Southwest.

Little Sevogle.

**Big Sevogle.*—Plenty of small salmon.

All these streams are run down; recently restocked by the Dominion Government.

Branches of S. W. Branch of *Miramichi:*

Bartholomew.
Caius.
Dungarvon.
Taxis.
Rock Brook.
Clearwater.
Burnt Hill.

All run down; recently restocked by Dominion Government.

Upper Salmon and Big Salmon, Bay of Fundy.—Salmon in moderate quantity are taken in these rivers.

Tobique and Nashwank, tributaries of St. John.—Until the summer of 1884 it was believed that the salmon of the Tobique would not rise to the fly. Eighteen were then so taken by one angler. This is my most recent information in reference to this river. Of the Nashwank I have learned nothing.

Anticosti Island.

*Jupiter.
*Salmon.

The salmon-rivers of Nova Scotia offer little encouragement to strangers, since the run is over by the first of June, or even earlier. *The Margaree River, in Cape Breton*, is, however, an exception: it furnishes very fair salmon-fishing throughout the summer, except in times of low water and drought

CHAPTER II.

THE OUTFIT—RODS.

LET us suppose that the advertisement and correspondence have done their work, and that a good fishing has been secured.

The next thing in order is to procure the outfit necessary to render the fishing-privilege available. The rod, being the most important element, claims first attention.

To the selection of this implement the angler cannot give too much care and attention. A poor rod is like a tight boot. The unhappy possessor is never at ease until he has thrown it into the ash-heap, or passed it over to some other unfortunate.

If a rod for trout-fishing was in view, no American angler of the slightest experience would dream of buying any but an American rod, or of being influenced in its selection by any foreign work on angling. But so little, comparatively, has been done and said on salmon-fishing in this country, and so much in Great Britain, that the American angler is apt to turn to and be guided by English authorities. He will read of rods eighteen, nineteen, and twenty feet long. Well may he groan when he thinks of brandishing such a weaver's beam all the livelong day, and question whether he would not find sawing wood equally beneficial and far less laborious.

In the matter of fishing-rods, I cannot but think the

mechanical common-sense of our English brethren is somewhat obscured by respect for tradition.

It is true that a longer rod will effectively handle a somewhat longer line than a shorter rod. The limit claimed for this advantage by its most hearty advocate is five feet of additional line for each additional foot of rod. I believe this to be excessive, but let it stand. Then with an eighteen-foot rod fifteen feet more line can be handled than with a fifteen-foot rod. When this has been conceded to the longer rod, all that can be said in its favor has been said. But is this advantage a practical advantage, and of practical value? I think not. Even the English authorities are substantially unanimous in that a cast of seventy-five or eighty feet is a command of distance ample for all practical purposes. But this distance has been more than covered with a single-handed rod ten and a half feet long. It must then be within command of a double-handed rod fifteen feet long.

Five and a half times the length of a rod is believed by many to measure the effective distance which can be covered with that rod in actual fishing. Though this rule is certainly not very far out, still it must be applied with a thorough understanding of the principles upon which it is based, or it will mislead. In casting the fly the rod is the fixed and the line the variable element. It is obvious that the line cannot be moved or managed except by the rod. From the rod is derived every impulse which makes the line efficient in fly-fishing. When the line is short and at a right angle with the rod, it is clear that a given motion of the rod will impart the maximum motion to the line. The line is then under the most perfect possible control.

It may be demonstrated that as the line lengthens, and that as the rod departs from a right angle with the line —either, or both—a given movement of the rod will produce a diminishing effect upon the line. If the rod and line were two bodies inflexible except at the hinge-joint that united them, this would be all we should have to consider. We would then draw a circle, using the grasp of the rod as a centre, and its length above the grasp as the radius. This circle would then correctly represent the path described by the tip of the rod in the act of striking a fish, or in retrieving the line for the "back-cast." We now produce a horizontal line to represent the water. The distance from a point on this circle to the water will represent a given length of fishing-line. If we now set a pair of compasses to this distance, and, applying one extremity to any other point of the circle, see where the other leg reaches the water-line, we can determine how much the movement of the rod through the given interval has withdrawn the line. It will be found to diminish as the length of line is increased.

The following diagram demonstrates this:

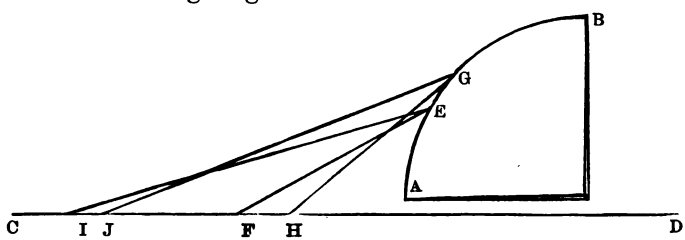

Fig. 1.

A B represents a portion of a circle described by the tip of a rod in casting; *C D*, the water-line; *E F* and

G H, equal lengths of line. The movement of the tip from *E* to *G* has retracted the line from *F* to *H*. *E I* and *G J* also represent equal lengths of line. The same movement of the tip from *E* to *G* has retracted the line, but from *I* to *J*, obviously less than the distance from *F* to *H*.

But this is, so to speak, but the preface of the story. It is the motion of the extreme tip of the rod, not of any other part, which determines the retraction of the line. Now if the outer end of the line is fastened, no matter how much motion is given to the rest of the rod, the end of the tip remains stationary and the line is not retracted. What angler has not demonstrated this to his utter disgust when he has hung his flies on the back-cast in some tree, the existence and location of which he has failed duly to consider? If the line, instead of being fast at its outer extremity, were submerged for a part of its length in tar, the same result would follow; nor would there be any difference, except in degree, if water was substituted for the tar.

It follows, then, that there must be some length of line upon which the friction of the water, coupled with the inertia of the line itself, will be so great as to overpower the stiffness of the rod. The tip then remains stationary though the rod itself may be doubled up by the energy of the angler; and though its elasticity may at length start the line into motion, it will do so but tardily, and too late to answer any useful purpose.

It thus appears that the ability to strike a rising fish fails first, since that motion must be prompt upon the rise to be of avail. Subsequently, and with an increased length of line, the power to retrieve the line for the

back-cast is also lost, since all the energy of the rod is expended in slowly drawing the line over and through the water, leaving no surplus force to raise the line and send it on its flight through the air behind the angler preparatory to a fresh cast.

These considerations form the basis upon which rests the rule that five times, or five and a half times, the length of the rod is the limit of practical fly-fishing. At this distance the power to strike a rising fish is practically lost.

But it is clear that any cause which lessens the friction of the line upon or in the water diminishes the resistance which the rod must overcome, and consequently increases the useful range of the cast. Such an agency is running water, since the current buoys up the line so that it sinks less. The rule, then, though sufficiently accurate for still water, will more or less understate the ability of a rod where a more or less sharp current lends it aid.

Now, a fifteen-foot rod, according to the rule, should handle a line of at least five times its length in still water, or seventy-five feet. But the fly is cast, for salmon, almost, if not quite, invariably upon a current, and a pretty sharp current too. Again, the loss of the ability to strike is of no moment. As we shall endeavor to show hereafter, it is the very first thing that an old trout-fisherman wants to lose—or at any rate to ignore. I therefore believe that a good fifteen-foot rod in skilled hands will fish efficiently at a point eighty to ninety feet distant from the angler, and that such a rod is amply long for substantially every exigency of fly-fishing for salmon on this side of the Atlantic.

But if a fifteen-foot rod is practically as efficient as one

of eighteen or twenty feet, it is incomparably superior in the comfort its use will afford, as well as in its control over a heavy fish. It is not the actual weight of a rod in avoirdupois ounces which fatigues the angler, but the leverage against him. To lift a given length of line, or to impose a given strain upon a fish, with an eighteen-foot rod, must necessarily require a far greater effort on the part of the angler than if the rod measured but fifteen feet. All agree that to cast all day with a salmon-rod is really hard work even for the able-bodied. But in view of the preceding considerations, it may well be questioned whether one half of this is not often absolutely waste labor.

I therefore recommend the purchase of an American rod, or at least one made upon the principles accepted and acted on by American rod-makers; and, unless the purchaser be one "the muscles on whose brawny arms are firm as iron bands," I would recommend fifteen feet, or that and a few inches, as a quite sufficient length. Not to Goliath of Gath, would I recommend a rod much exceeding sixteen feet.

Indeed, where the fishing is open and fortune smiles, after the wire-edge of the appetite has been taken off by the capture of a reasonable number of salmon with the double-handed rod, so that the loss of a fish is not too harrowing, I question whether strict angling morality does not thereafter require us to resort to a single-handed rod of ten feet six inches to eleven feet in length, and of from nine to ten ounces in weight,—particularly if the fishing is so remote from communication that the fish cannot be sent out, and the supply exceeds the camp needs. For a fly-fisherman to condemn fish legitimately

taken with the fly, whether trout or salmon, to the salting-barrel, has always seemed to me a breach of angling propriety but little better than throwing them aside to rot. It is a mere matter of sentiment, I admit; but those are my sentiments. To take salmon with a single-handed rod is certainly more sportsmanlike, since it requires greater skill and the fish has more chance. It is also more economical, since the contest will be more protracted, and that alternation of hope and fear which constitutes the great charm of salmon-fishing continues for a longer time with each fish. Thus fewer fish furnish more fun, which after all is the main thing. With a canoe as a movable base from which to conduct operations, and a proper reel and line, the angler is sufficiently sure of ultimate victory to warrant the effort; and, stimulated by an approving conscience and perhaps just a little dash of self-conceit, the silver sheen and graceful outline of a salmon so taken will far surpass in its captor's eyes—yes, and in the eyes of others—the best that any competing double-handed rod may produce.

Having decided on the length of the rod, choose one having as nearly as possible the action of the favorite trout-rod. Many err in selecting a rod because they do not handle it in the shop under the conditions to which they are accustomed in the field. The counterpoising effect of the reel should never be guessed at or ignored. It is the balance—or in other words the leverage—of a rod, rather than its actual weight on the scales, which really determines whether a rod of a given length is heavy or light. When poised to test its balance, a properly proportioned rod without the reel will always feel

top-heavy when compared to a like rod used as in actual fishing with reel in place. The longer the rod the more marked the difference becomes. If this is overlooked in the selection of a salmon-rod, the purchaser will naturally choose one without the apparent defect, and get in consequence one abnormally light in the tip. This is one of the very worst faults a salmon-rod can have. A heavy line is so advantageous in salmon-fishing as to be almost indispensable. The rod must have the power to lift and handle such a line with certainty and precision. Doubtless some men can, with patient practice, do pretty fair work with a rifle the sights of which are quite out of alignment, but that is no argument for the selection of such a rifle. A pertinacious struggle may at last in some measure overcome the difficulty, but that is no reason why the difficulty should be voluntarily created

A rod of which the tip is not absolutely under the command of the lower part is exactly like a rifle the sights of which are out of adjustment. It is the extreme end of the tip which directs the fly to its mark. The complications caused by wind and neighboring obstacles will sufficiently exercise the skill of the angler, without handicapping himself with what might well be likened to a gun with a crooked barrel.

The next step is to see that the curve described by the rod when bent is a true curve. Its presence indicates that each fibre of the rod is bearing its proper share of the load. But if the rod shows a broken curve—stiff, alternating with softer places—the strain is unfairly distributed. In the first case the rod has all its resources at command for the day of the trial of its strength, like a good army ably handled; in the other it is like an army the compo-

nent parts of which are scattered beyond supporting distance of one another—sure to be beaten in detail if seriously attacked. A true curve in a rod is like personal integrity in a man—with it he can be relied on; without it he cannot.

The best method of testing this is by fastening a string from the end of the tip to any convenient projection. One person then puts a strain on the rod, while the purchaser studies the curve. The strain should be tolerably severe and the curve quite pronounced. The curve may be parabolic in character, that is, with the bend mainly on the upper part of the rod; or it may be a true arc of a circle, or any curve between these two extremes, according to the style of action the rod may have—it is immaterial which. But the curve should be an even one. One single place in the whole length of the rod which is either unduly straight or unduly bent should condemn the rod. Perhaps a suspicion of liberality may be shown to the neighborhood of the ferrules, but only a suspicion.

This brings us to the question of how the rod should be joined together, for clearly a salmon-rod all in one piece is out of the question.

In the Provinces the American angler will find spliced rods decidedly predominant. The sight of a ferruled rod operates with the certainty of hot water and mustard on one who is accustomed to a spliced rod, and he can no more refrain from doing a little missionary work on behalf of his favorite method than he can refrain from breathing. The more ingenuous will admit, though with reluctance, that it is rather a nuisance to join such a rod properly; also, that the ends of the splices are delicate

and must be protected with assiduous care when the rod is apart. Nay more, if really crowded into a corner, an admission may be extorted that it is rare to find a spliced rod of two or more seasons' use, the thin ends of the splices of which are not split or broken.

But nothing is absolutely perfect in this world. Is not a rod all in one single piece the ideal rod? And what is a spliced rod when joined together but a single-piece rod? "Pretty must hurt." We do submit to some inconveniences, but we obtain thereby the true ideal—a degree of perfection unattainable in any ferruled rod!

This sounds rather plausible. But before we are talked into any really revolutionary action let us consider the matter a little.

When a fishing-rod is straight, if we limit our attention to any short portion of its length, its sides may be considered as parallel and of equal length. Now let us bend the rod, and, confining our attention to the same part, see what takes place. The upper and lower sides of the rod are no longer straight, but each has assumed the form of an arc of a circle, one arc lying within the other, and both having a common centre. That arc most distant from the centre must therefore be the longer, and the arc nearer the centre must be the shorter. And such is the fact. In bending the rod we have stretched the fibres of the upper and compressed those of the under portion of the rod. It is the reluctance of these fibres to submit to this distention and compression which is the stiffness of a rod, and it is their promptness to return to their original condition which constitutes its elasticity.

We have now clearly in mind that in bending a rod we stretch the upper and condense the lower side, and that

stiffness and elasticity are but other terms to express the resistance offered by the material of the rod to this enforced change.

Now suppose we take two pieces of wood each of one square inch in cross-section, and, laying one upon the other, lash them together as firmly as we can in the position shown at *A* in the cut.

This I will hereafter call the "compound stick."

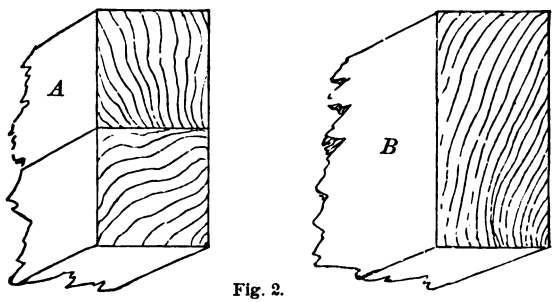

Fig. 2.

Let us also prepare a single piece of wood *B* like the other in every respect, except that its cross-section measures one inch by two. It is therefore of exactly the same dimensions as the compound stick we have made by lashing the two inch-square pieces together.

Now let us place the ends of the single and of the compound stick upon equidistant supports so that both rest on edge, and impose an equal load on the middle of each. Each stick will then oppose to its load a section of material one inch wide and two inches in perpendicular depth,—in short, an exactly equal length and quantity of material, disposed in exactly the same position, to meet an exactly equal strain.

But which will be the stiffer? There is not a laborer who ever carried a hod up a gang-plank who does not know that the single stick is far stiffer than the compound.

And it stands to reason. The fibres of the single stick must undergo a change throughout the entire depth of its two inches. It therefore follows that to bend a distance equal to that of the compound stick the outer fibres are subjected to a greater extension and compression, and that more force must be required to produce this greater result.

But with the compound stick the case is quite different. The frictional contact of its two component parts one upon the other ultimately becomes less than the power of the fibres of each to resist change. The stress is therefore in part relieved by one stick sliding on the other in the line of least resistance—that is, on the line of contact. Each part is in a measure beaten in detail. Here, as elsewhere, "In union lies strength."

But which is the more elastic?—or, what is the same thing, which will recover most promptly and completely on the removal of the deflecting load? Clearly the single piece. The two parts of the compound piece slide one on the other during the deflection caused by the weight. But when the weight is removed, where is the power to cause them to slide back to their original position? The elasticity of the parts may initiate the motion, but as the fibres approach their normal state this force uniformly decreases in strength, till ultimately the friction will predominate. Recovery then ceases, and the compound stick remains bent until this friction is removed by separating its parts.

This, it seems to me, is the philosophy of the splice. If so, then it is a delusion. The rod must be stiffer, and must be more elastic at the solid, than at the spliced parts.

I have seen many spliced rods in use. The foregoing is, in great part, not the result of abstract reasoning upon an abstract proposition, but rather of an effort to assign a cause for results which obtruded themselves upon my notice.

Unless some adhesive—like glue, for example—is interposed between the spliced surfaces, I believe a spliced rod is just as defective as a rod joined with very long ferrules. The defect, it is true, is in the opposite direction, but I am by no means sure it is not practically far more objectionable.

I have seen many a spliced rod, which, when it was joined, was perfectly straight. But I cannot recall one which did not show the "softness" of the splice when bent, nor have I ever seen one which after a heavy and protracted strain, such as that of fighting a salmon, did not show a droop at each splice until straightened by extrinsic aid. On the other hand, I have seen many and many a ferruled rod in the bend of which the eye failed to detect the slightest departure from a true curve, and which recovered promptly and completely from every strain. I will go still further: I believe and maintain that, given two rods,—the one the ideal rod of a single piece, and the second properly ferruled, both otherwise precisely alike,—the most skilled, if blindfolded, cannot distinguish the action of one from the other.

I therefore recommend the American angler to set his face as a flint against the propaganda of the splice.

In my book "Fly-Rods and Fly-Tackle" the philosophy of the ferrule was discussed at length. I can only add, that further thought, experiment, and experience suggest no change or error therein. For years the manufacture of fly-rods and fly-tackle has been my chief recreation. I believe I may conscientiously say that every effort, except perhaps at the very outset, has been directed, not so much to produce a rod or other implement, as to subject some theory to the crucial test of actual experiment.

A short ferrule with a cylindrical bore made from tubing drawn inside and out—that is, drawn through an annular die upon a polished mandrel—for the outside ferrule, and an inside ferrule without dowels and fitting its mate throughout the length of the insertion, and inserted when the rod is put together until the neighboring ends of the joints are almost if not quite in contact, were there advocated as the best method of uniting the several joints of a trout-rod.

I now assert what I could not then, since I had not actually tried it, that it is both the simplest and the best known method of jointing a salmon-rod.

When, during the winter of 1884–85, I announced to some of my angling friends, particularly those in the trade, that I proposed to make a salmon-rod and unite its several joints with ferrules of this description, it was the old story over again. It might answer in a trout-rod, but under the severer strain of a salmon-rod such ferrules would surely split or bend or throw apart, and the first salmon struck would reduce my rod to a wreck and plunge me in that slough of despond into which the angler always sinks when he encounters such a disaster.

My old argument, that I had used this form of ferrule

for more than ten successive years in the heavy trout-fishing of Maine without the slightest accident, and that therefore any failure which might be cited against it must necessarily be due to faulty workmanship rather than error in principle of construction, was no longer available. As far as I knew, a salmon-rod had never been so joined. Thus I could but answer theory with theory, and with the usual result:

> " A man convinced against his will
> Is of the same opinion still."

The salmon-rod in question was fifteen and one half feet long, and in three joints of equal length. The longest ferrule—that uniting the butt and middle joint—was three and one half inches long, and all the ferrules were fitted in accordance with the principles before set forth. No device whatever was used to prevent the joints throwing apart, except the natural cohesion due to the fitting of the ferrules one within the other. The ferrules were at all times kept well greased to facilitate ultimate separation and to exclude water, as is my practice; while the metal of which they were composed was in itself an experiment, as far as this use of it was concerned, and was found so inferior to German silver or even good brass in stiffness, that it was not without hesitation and doubt that I used it at all.

With this rod so united I took twenty-five salmon. The largest weighed thirty-two pounds, and was gaffed only after a struggle lasting one hour and fifty minutes. One fish of twenty-six pounds, taken after a fight of one hour and fifteen minutes, was hooked in the side about three inches back of the gill. One fish, which I

thought would weigh nearly if not quite forty pounds, was lost after one hour and thirty minutes' play. I brought it in to the bank, but at the approach of the gaffer it rallied, and made a sharp run of some sixty or seventy yards. I followed it down stream, and had gradually worked it in again until it was about thirty or forty feet distant. It was then a very sick fish, frequently rolling upon its side, as it came in with little or no resistance except that produced by the friction of the water. Then the last shred of skin which held the hook gave way, and it escaped. These are the times that try men's souls—as well as their morals.

I lost another fish which I thought still larger. We had had it hot and heavy for thirty minutes, and I had worked him in quite near the bank, when down came an island of floating logs. At this inopportune moment the salmon started for the opposite shore at race-horse speed, passing just below the floating logs in his course. I thrust my rod under water nearly half its length in the hope that the obstruction might thus pass over the line. But when one hundred and ten yards were out something fouled it, and a leader tested to eight pounds parted, and the fish escaped.

Of the whole lot of twenty-five fish actually reduced to possession, the majority were of twenty pounds or over, besides others not mentioned above, which were lost after a contest of greater or less duration. These fish were all "fresh-run," and were taken about four miles above tide-water. When I have used the term "fish," salmon are to be understood in every instance. Indeed, nothing else is considered worthy of that name in a salmon-stream.

This, it seems to me, is a pretty fair test of the simple

ferrule. If its principle of construction is wrong—if such a ferrule will split or bend or throw apart, as claimed by its opponents, these defects, or some of them, should certainly have made themselves manifest.

Such was not the case. They were as perfect in every respect when I packed my rod to return home as when I took them from the lathe and first put them on the rod; and though no device whatever of any description was used to prevent them from throwing apart, aside from the cohesion due to their fit, not one of them ever started. Indeed, I might add that within a week after my return, and without alteration or repair, I loaned this rod to a friend who was anxious to try his luck with salmon at the same place, and who also used it during his fishing without accident.

"The proof of the pudding is in the eating."

While the American angler will find the salmon-rods of England and the Provinces considerably cheaper than those made here,* I, notwithstanding, strongly recommend that the preference be given to a domestic rod. While the length and weight of English rods is in excess of our needs, it cannot be denied that many of their makers well know what the action of a fly-rod should be, and how it is to be obtained. Their material, too, is generally excellent. But the American observer cannot but wonder why a people who produce mechanics capable of work so difficult and so exquisite as their gun-locks, for

* I have recently seen American ash and lancewood ferruled salmon-rods retailing for fifteen dollars, which seemed fairly to compete even in this respect. They were really excellent rods—good enough for any one.

example, should turn out such wretched ferrules on their rods. Their patent-list, their angling books, and the advertising columns of their fishing papers, bristle with devices to prevent ferruled fishing-rods from throwing apart. Now, with our fifty-five millions of people, and the great and constantly increasing popularity of angling among them, it may safely be assumed that full as many ferruled fishing-rods are in use here as in Great Britain, if not more. How is it, then, that on that side of the Atlantic some device to prevent the joints of a ferruled rod from throwing apart is thought absolutely necessary, while on this side such a device is thought to be absolutely useless?

This tells the whole story. While we are altogether indebted to England for the art of fly-fishing, and while we have learned and have still much to learn from there, it may well be questioned whether, in all that relates to the mechanics of the art, fish-hooks excepted, we are not in a position to repay her some of our many obligations.

When a salmon takes the fly and starts for a run, his mind is fully made up. He is an obstinate brute, and run he will. He may leave the fly behind, or take it, or it and part of the leader with him; but at all events he is bound to go. If the performance is not to end before the curtain has fairly risen, it is essential that the line suffer no check beyond the steady drag imposed by the click of the reel. An enamelled water-proofed salmon-line is an expensive thing, and the less it is worn in use the longer it will last. If, on the other hand, a small linen line be spliced to twenty-five or thirty yards of the more

expensive kind to be used when casting, it is essential that the splice shall always render freely when the line is taken by the fish or is recovered by the angler.

Standing-guides rather than rings, and a "three-ringed top" rather than the ordinary single ring-top, would seem more fully to meet these conditions, while directing the line along the rod and from the end of the tip just as well. The guides may be tubular, as is usual on striped bass-rods, or they may be made of rather small and stout rings inclined at an angle toward one another so that they may meet above, while separated below a distance a little less than the diameter of the ring. They are silver-soldered together where they meet above, and are brought in contact with, and in like manner united to, a keeper below. These weigh but little more than the ordinary ring and keeper, the weight of the extra ring being partly offset by their smaller size.

Fig. 3.

Fig. 4.

Fig. 5.

He who desires to make his own rod will find full directions for that purpose in "Fly-Rods and Fly-Tackle." Since the method of planning a rod there given is a mathematical method applicable to rods of any size, but little need be added thereto. But three points need be known: the diameter at the extreme outer end of the tip, the diameter at the thickest place of the butt above the handle, and the distance between these two points. All

else will determine itself. The smaller end of tip will be $\frac{1}{8}$ inch. The diameter of thickest part of butt-joint above handle for lancewood or greenheart will be $\frac{9}{32}$ inch for a rod 15 feet over all, and $\frac{9}{32}$ inch for a 16-foot rod, measured in the same manner. The handle should be 22 inches long, and the reel-seat should be placed $8\frac{1}{2}$ to 9 inches from the outer end of the butt-cap.

With good material, that uniform action of a fly-rod which makes it feel in the angler's hands as though it were a living thing, is most readily attained by making the thickest part of the middle joint and tip but little thinner than the smallest part of the joint immediately below it. The shorter the ferrules the more closely the diameters should approach one another. This is readily done if the male or entering ferrule be "capped"—that is, enlarged at the end which slips over the wood by a short metal band of greater diameter. If there is any reason for the common practice of capping both the male ferrule and its mate as well, then there must be reason in the construction of those rods which one sometimes sees, in which an abrupt and marked change of diameter occurs at every joint. If such reason exists, it has altogether eluded my investigation.

We will conclude this chapter with this advice, which, to him who has not made it a practice, is worth all the trouble that reading this chapter has given: Grease your ferrules well before jointing your rod for use, and wipe them thoroughly inside and out before packing it away. Store it in a perpendicular or horizontal position and in a cool place, and tie no string or tape tight about the middle of the bag which contains it.

CHAPTER III.

THE OUTFIT—REELS.

HAVING selected our rod with the circumspection demanded by its importance as a factor in determining the quantity of pleasure our fishing will afford, we naturally turn to the choice of a reel, since this ranks next in consequence.

The spool portion of the reel should be of such capacity as to hold at least one hundred and twenty yards of *B*-line when somewhat carelessly wound upon it, and this so that not one single turn of the line projects beyond the outer margin of the spool.

In salmon-fishing it is not that the line *should* at all times render freely from the reel, less the constant and uniform restraint of the click: it is a case of *must*—it is *absolutely imperative* if anything other than bitter disappointment is to result from its use.

I shall never forget a little drama enacted on the banks of a celebrated salmon-stream in June, 1885. The hero of the play was a man of skill and experience as an angler. His chief attendant, or gaffer, was an athletic Indian of such piscatorial ambition that gall and wormwood might be ranked as nectar if compared to his chagrin when another canoe brought in more or larger fish as the result of the day's sport. He was also one who dreamed dreams, and saw visions in the night. When

he first pushed the canoe from the bank in the morning he always delivered the auspices: "Catch fish to-day: I dreamed woodchuck"—or something else, for the omens which portended good-luck were numerous, and of varied character.

On this occasion the seer was on his mettle. His practised eye and varied experience had long since informed him that his present employer was one to make the most of the smiles of fortune. So it came to pass that one auspicious day they raised and fastened a fish clearly quite a little larger than anything that had been taken that season. Had the fish been of solid silver, as it looked to be, neither could have welcomed it with more ardor, or more earnestly desired to make it his. The contest was waged from the canoe for quite a while, and was then adjourned to the bank as the fish became more amenable to reason. They worked him in gradually, but at the approach of the gaffer he moved out again into the stream. Then came a crisis. Something went wrong in the bowels of the reel, and the spool refused to turn under a strain which threatened either to pull the fish's head off or break the tackle. The angler was too old a hand to spare his rod in such an emergency, and he taxed it to the utmost, while he endeavored with some success to tear the line from the reel with his right hand. The seer flew to his assistance. Together they performed like a dog in a hornet's nest, feeding out to the struggling fish such instalments of line as they were able to drag out by main force despite the obstruction. Suddenly the reel seemed to think better of it, and resumed its usual complacent demeanor. The barometer of their feelings, then clear way down

below the despair mark, began to rise. Things went on in pretty much the usual manner for another twenty minutes or so, when the fish began another tour. Again the reel struck work, the leader parted, and away went the fish, carrying with it a new silver doctor-fly and its owner's happiness. Words would fail to do justice to the picture. There stood the angler and the seer blankly looking at one another, each with his mouth open as though he desired to prove to his *vis-à-vis* that the sudden and unexpected disappearance of the salmon was not due to his having swallowed it. But let us drop the curtain, and shut out the scene that followed.

This fragment has been recalled from the past to illustrate, and if possible to enforce, the absolute necessity of a good reel. No human skill can avert disaster if this indispensable part of the outfit refuses duty when fast to a fish. It is like spiking the guns of an army in the crisis of battle.

That the spool of the reel has the capacity to receive the line when wound carefully thereon, in peace and quiet, and with the aid of some helping friend, is not enough. When the result is of moment, circumstances will preclude that care, and the angler must rely on his own unaided efforts. In case of doubt, therefore, let the error be on the side of excessive rather than deficient capacity.

A reel, the diameter of the spool of which is 3⅞ inches, with a width between the outer margins of its sides of 1⅝ inches, will safely carry the desired length of one hundred and twenty yards of *B*-line.

Other very important features are the mechanism of the click, and the degree of resistance it offers. The

primary object of the click is neither to burden the fish, nor to furnish an orchestral accompaniment to his play. These are both important functions, but they are not *the* function of the click. It is primarily designed to prevent the reel from overrunning. It is said a salmon can swim fifteen hundred feet a minute. I do not know how this is, for I have never measured it; but if it is permissible to judge from mere impression, then from fifteen to one hundred and fifty miles is nearer the mark. But moderation is an excellent thing, so let us be moderate and assume sixty miles—or a mile a second—as about the thing.

Now when line is drawn from a reel at any such rate as this, it is clear that the spool must revolve with considerable industry. Salmon are quite self-willed. They never stop to consult the angler as to their movements, while they show a decided predilection for exactly that which, viewed from the standpoint of the canoe or bank, they ought not to do. They will rush out line with a velocity and in such quantity as to fill the angler with the liveliest apprehension, notwithstanding that he follows them down the bank at his best pace, totally regardless of the fact that his shins are fast assuming the complexion of a huckleberry pie from the obstacles which beset the path; or despite the fact that his canoe-men are nearly breaking their backs in the effort to keep within some kind of range. Does he then slow down gradually, and come to a state of rest in an orderly and well-conducted manner? Not a whit. He bounds into the air like an acrobat, falls back into the water with a splash, and comes to as dead a stop as if converted into one of the stones which line the river-bed. Here he may

remain motionless for ten minutes; or, in half as many seconds, he may dart through the water as though bound over the neighboring hills to some distant and less troubled river, where man ventures not and the insects are less hot-footed. The part of the reel in all this play is that of second fiddle. It must be strictly a duet, and never a solo. When the fish runs it must promptly respond with its cheerful melody; when he stops, it must at once begin to count "forty bars rest." For, if perversely independent, it continues to run on its own account, the outer turns then remaining on the spool become loose and confused; the angler, hastening to regain line, winds over them; the salmon takes a fresh run; the line renders as it should till the place of the last halt is reached; but there it fouls, refuses to render, the leader parts, and the angler lifts up his voice and—weeps.

When one hundred and twenty yards of line are wound upon my own reel, which seems to answer all these requirements, the coil measures $3\frac{3}{4}$ inches in diameter. If the line is then led through the rings of a rod to a spring-balance, and a strain is applied by bending the rod, the click starts when half a pound is indicated. When the line is half exhausted one pound is required; and when the combined diameter of the axle and the remaining line measures one inch, three pounds are necessary.

Some salmon-reels are now to be had with a drag adjustable from the outside, which can readily be made to supplement the click with any desired amount of resistance. They are excellent, but expensive.*

* I have recently seen a good serviceable reel of this description retailing for $ 5. The market price of salmon fishing tackle shows a marked downward tendency at present.

Others are constructed with a piece of flat spring-metal bent into the shape of one half of a bow wagon-spring. This is placed in the cavity formed between the spool and the outer plate on the handle-side of the reel, and acts in the following manner: The axle of the reel is inserted through a hole in the middle of this spring, and the whole is so arranged that when the outer plate of the reel and the spool are in position, the middle of the springs bears against the spool and its extremities bear against the outer plate. It acts as a drag, and its vigor may be adjusted by taking the reel apart, and increasing or diminishing the bend in the spring as more or less resistance is desired. But in using a drag of this kind, the bearing of the spring upon the spool, which is the place of motion, must be well lubricated with a lubricant having considerable body. Had this precaution been taken, the disaster with which this chapter opens would never have occurred.

It is apparent from the foregoing that the life of the click is one of severe usage, and that if it is to be of long duration every part must be of the very best.

Lightness in a salmon-reel, though important, is not of such consequence as in a trout-reel. One pound, when empty, is a light weight for one of the capacity indicated. Three or four ounces additional, however, is of far less consequence than any possible deficiency in strength and durability. A poor salmon-reel to one who has to use it, is dear even though a free gift.

LINES.

The varieties and merits of lines for fly-fishing, as well as the materials and methods of manufacture, were quite fully considered in my former volume.

As to the kind of line to be used, an enamelled water-proofed line is altogether to be preferred. But the best is worth ten cents a yard, bringing the cost of a line of one hundred and twenty yards up to the not inconsiderable sum of twelve dollars.

Many economize here by buying thirty or forty yards of this line, and splicing to it a hundred yards of twisted "Cuttyhunk" twelve-thread linen line. Until the angler fastens a fish the water-proofed line alone is in use, so that facility in casting the fly is not affected. When, however, the fish has been struck and is in play, the linen line comes into use and gives the latitude required to humor its vagaries. Twelve-thread Cuttyhunk-line ranges between an *E* and an *F* water-proofed line in diameter. It takes up much less room on the reel than a water-proofed *B*-line, since the latter is three sizes thicker. Thus a reel which will be overloaded with one hundred and twenty yards of *B*-line, will accommodate one hundred and fifty yards of this combination-line without difficulty. The Cuttyhunk-line costs one and a half cents a yard, and, since it will lift a dead weight of eighteen pounds, has ample strength.

This is a very good arrangement provided the splice is well made. It is difficult to imagine an angler in a more hopelessly embarrassing position than to be fast to a salmon, and find that the splice of his line has fouled in the rod-rings. The splice may refuse to render at all, or it may run out as smoothly as possible and then resist every effort to bring it back. The first is the happier lot, since then the whole thing is over in a breath, like pulling a tooth, and the angler can abandon himself altogether to wishing his economy at the bottom of the river. In the

second case he will lose his fish just the same, but there will be an interval during which he and his gaffer will almost climb out of their clothes in a vain endeavor to prevent the inevitable.

If this plan is adopted, therefore, too much care cannot be given to making the splice. To so unite the lines that they will break rather than draw apart, presents not the slightest difficulty. But that there be no abrupt increase in diameter where at the ends of the splice the single passes into the double thickness, is another matter.

To accomplish this we first scarf the ends to be united for about a quarter of an inch—that is, trim them off by cutting or scraping with a knife so that they gradually diminish in thickness to nothing. Next an inch and a quarter of each end is well coated with shoemaker's wax, and warmed so as to induce the wax to penetrate as much as possible. We will now assume the water-proofed line to lead to the right, and the linen line to the left of the operator. Having provided himself with a needle threaded with doubled silk well coated with the same wax, he fastens the water-proofed line a foot or two from the splice so that he can pull on it; he then takes three or four turns with the silk around the water-proofed line, then places the scarf of the linen line close to it, and winds up and on to the scarf, drawing the silk tight, and winding as closely and smoothly as possible. After having wound over the scarf, he passes the needle between the lines and makes three or four solid turns around the linen line alone; then he resumes winding over both parts for a short distance; then takes three or four turns round the water-proofed line only; then over both; then over the linen line alone—repeating these operations until the wrapping extends be-

yond the scarf of the water-proofed line on to the linen line, where he fastens off with an invisible knot. He then tests the integrity of the job by a spring-balance pull of ten pounds, and finally gives the entire wrapping a couple of coats of shellac.

To begin at the right and wrap to the left, as indicated above, will be found more than a mere matter of convenience. Then the left hand can hold the parts to be united parallel with one another during the operation, and keep their tension equal. A smoother as well as a more secure splice is the result.

Angling for salmon with the fly is always conducted on a river, and down stream. When we fish for trout in the streams of this country, the stream is usually small, and so protected by surrounding forest that the direction of the wind is of little moment. If, on the other hand, we fish in ponds or on lakes, we are ordinarily able so to manœuvre as to bring the wind from a not unfavorable quarter.

Salmon-rivers on this side of the Atlantic are ordinarily streams of considerable width, flowing through valleys of some depth. No matter what may be the direction of the wind above the hills, on the water it usually draws either up or down stream. Unless the angler wishes to devote perhaps days in succession to the amusement of twirling his thumbs in camp, he must be prepared to fish irrespective of any such trifling drawback as an adverse wind. To do this, his line must be one capable of having considerable momentum imparted to it to overcome the wind. Now momentum is measured by the velocity of the moving body multiplied by its weight. Therefore, to obtain

the required momentum it is not enough that the angler impart any conceivable velocity to his line. It must also have weight if it is not speedily to succumb to the opposing force of the wind. Of course little can be done in the teeth of half a gale of wind, and nothing against a gale. But against any ordinary summer breeze a water-proofed *B*-line can be made so to hold its way, that fishing can notwithstanding be carried on with pleasure and profit. It is for this reason that it has been heretofore assumed that such a line would be used, and that a rod with backbone enough to handle it has been recommended. When the wind is asleep or fair, one line will answer almost as well as another. But when it is in opposition and chafes the current into waves, then is the time to try to beguile a forty-pounder; and unless the opportunity is to be ignored, a heavy line is indispensable.

Salmon-lines, it is said, are now in preparation for the market, in which some twenty-five or thirty yards of both ends are of *B* size, while the intermediate connecting portion of seventy yards is to be two or three numbers thinner. They would seem to fill every requirement. They will have the weight to cast well, while a greater length of line can be carried on an equal capacity of reel; and when the salmon makes a long run, the thinner portion of the immersed line will be less affected by the current than if the line were of uniform thickness throughout.

LEADERS.

The seat of two thirds of all the anguish and despair which checkers the bliss of the salmon-angler, lies here. Do what he will, the leader remains the weakest part of his outfit. Though adequate to resist every effort of the

largest salmon when backed by a good rod well handled, yet when a judicious fish takes a turn of the line around a rock or snag, and the rod is thus neutralized, it is this part that usually gives way and wrecks our hopes.

No excellence of, or lavish expense bestowed on any other part of the tackle will make good a defect here. At best its strength is inferior to some of the exigencies of its use, and therefore the most assiduous care should be taken that it be not unnecessarily deficient in this respect.

To accurately judge the quality of gut in the shop is as difficult as to accurately judge the quality of a horse in the jockey's stable. When the hank is opened, and each strand is drawn through the fingers and separately submitted to inspection, then it is easier.

The first requisite in selecting gut for salmon-fishing is roundness; the second is uniformity in diameter from end to end; third is thickness; the fourth is length; the fifth is elasticity or springiness when bent; and the sixth a uniform glassy transparency untinged with yellow. The order indicates the relative value of these characteristics. Perfect roundness is worth more than all the others put together—indeed its absence is a defect that no excess of other merit can make good. The color used to be a more reliable guide than it is now, when chemical have so largely superseded mechanical means in cleaning and bleaching the gut.

No expert pretends to judge the quality of gut except with the aid of a strong light.

The eye must be in constant training, and as keen to detect the slight variations of appearance as that of a dyer. Indeed there is no other article of which the

angler makes use, the quality of which it is so difficult to determine by mere inspection. Few dealers dare to rely altogether on their own unaided judgment, but habitually keep on hand samples of known quality, upon a comparison with which they largely depend.

Though the directions of the books for this purpose would lead one to suppose that the qualities desirable in gut were many, in reality they are but two—length and strength. The first may of course be decided at a glance. All the other points to which attention is recommended, are but symptoms from which the strength of the gut is to be diagnosed.

Economy and prudence both require that every salmon-angler should make a hank of good gut part of his outfit. The upper two thirds of a leader will still be perfectly sound and reliable, when the lower third has become frayed and unsafe. If it is merely a question of replacing three or four feet of the outer end of a leader, it will probably be done when it should be done—that is, at the first indication that the strength of that part has become impaired. But the high first cost, and the limited number usually in reserve, are apt to induce the angler to discard a leader with reluctance, and only after he can no longer coerce himself into believing it safe.

Though I have not the most abiding confidence in the practical value of printed directions for this purpose, still I will do my best to aid in the selection of this hank of gut. We face the strongest attainable light, and hold the bundle of gut in front of us so that one end projects toward the light and the other toward us, each hand holding an end of the bundle. We now bring our hands toward one another, thus compelling the strands to sepa-

rate, and forcing the gut to bend upward in a curve something less than a half-circle. In this position it will be noticed that a certain portion of the curve seems more highly illuminated than the rest. Holding the gut thus bent, we raise first one hand and then the other, so that this high light shall run slowly to and fro over the curved gut from end to end. During this operation round gut will present a uniform color, while "flats" will reflect the light unequally and seem to scintillate. The springiness of the gut will be determined at the same time. The length of the strands has also been ascertained by almost the first glance; also that the gut has a glassy appearance, free from any yellow tinge. If we have a gauge of the form shown on page 70 of "Fly-Rods and Fly-Tackle," or any similar device for measuring the thickness of gut, we now use it. If we have not, we have at least provided ourselves with some old and well-tried leader to serve as a standard of comparison. We select the thickest gut we can find, but by no means forgetting that roundness is a *sine qua non.* We test a number of strands to be sure that the thickness is uniform from end to end. That gut should be conical instead of cylindrical, is a quite common and easily overlooked, and an absolutely fatal defect. It is not strong enough under conditions requiring gut of its larger diameter, while it is too obtrusive to use where its thinner end would suffice. It is difficult to conceive of any circumstances under which it is available.

But we have selected a hank of gut the thickness and length of the strands of which are satisfactory, while we believe that it has the strength its diameter would indicate. Still we but believe—we ought to know. So we

select three or four strands as nearly as possible of average quality, soften them well in tepid water, tie a loop in each end, run a lead-pencil through one loop, hook a spring-balance into the other, and ascertain the breaking strain. It ought to be ten pounds or over, unless the break occurs at one of the knots. We may then soak that strand again and repeat the test.

I am firmly of the opinion, and consequently strongly advise, that this form of test should be applied to every leader to be used in salmon-fishing. It is the only method by which the strength of a leader can be determined. The most expert may be deceived as to the strength of gut—or granting that the gut is unexceptionable, still there may be one defective strand among the many of which the leader is composed, or one defective knot or place in some strand otherwise excellent. I insist that my single-gut salmon-leaders shall safely endure a strain of eight pounds applied with the spring-balance, and find no difficulty in procuring gut at a reasonable price that will produce such leaders.

I am quite aware that some expert anglers think that a test so severe impairs the ultimate strength of the gut, and that it is therefore injudicious. This is either so, or it is not so. It is a matter to be determined not by theory but by experiment, and it is capable of being so determined. Now during the last ten years I have made hundreds of leaders for myself and friends, every one of which has been so tested. The strain imposed has of course been proportioned to the thickness of the gut and the use for which the leader was designed, but I do not think that any material variance in its proportionate severity has been made. It is my practice never to use a

leader which has been coiled up and allowed to dry, without repeating the original test. The terminal three or four feet of a leader I usually renew two or three times before the leader is thrown aside; and always, after such a renewal, I repeat the original test. Again, if I entertain the slightest doubt of the integrity of a leader during its use, I at once repeat the test. The claim that I do not speak at random in this matter seems to me, therefore, not unreasonable. I have yet to see or to hear of any occurrence in the use of these leaders, which would tend to cast the shadow of a doubt upon the propriety of the test.

But again, if the test impairs the strength of the gut to an objectional degree, should not that fact appear in the course of so long continued a practice? Should not a leader so tested show the impairment of its strength by breaking again and again, each time with a diminished strain? Such has not been the fact. In testing a leader to eight pounds, it may break at three pounds on the first trial, at six on the second, seven on the next, and so on until a strain is reached within half a pound of which the leader will thereafter break every time. This is its ultimate strength. It may give way at half a pound or so on either side of this, as it is broken again and again, but the difference in amount is not material.

I have dwelt at length on this because thoroughly impressed with its great importance. Times will come in the experience of every salmon-fisherman when he must throw *finesse* to the winds, and make a direct issue between the strength of the fish and that of his tackle. If he has tested his leader he knows the extent of his resources, and, if defeat is the result, that it was inevitable.

No touch of remorse then embitters the misfortune. At times when the line fouls on some rock or snag, and a freshly fastened fish can put forth his strength against an unyielding resistance, no single leader can withstand the strain. But except under such or similar circumstances, a leader which has borne a test of eight pounds will not be found at fault should the fish escape.

> "Of all sad words of tongue or pen,
> The saddest are these: It might have been!"

These well-known lines apply with as much force to salmon-fishing as to any other phase of man's life.

Some seek to avoid this result by the use of braided or twisted leaders of many strands. I do not believe in it. The result should not be assured, or skill and promptness of resource are eliminated, and angling ceases to be sport in the proper sense of the term. It is like shooting at a sitting bird. But there is another consideration of equal moment. The young and foolish among fishes, as among men, are easily led astray by temptation. But the patriarchs—and these are the objects of the true angler's pursuit—are more prone to look before they leap.

Upon one occasion when a run of large fish were on the ground, I lost two fine fellows through the fouling of the line. In both cases the leader was broken. I was anxious to take a large fish the next day to ship to a friend in a distant city. That it should be done on that day was of importance, since otherwise it could not be sent through without lying over Sunday on the way; while if I waited till the next week the large fish might have passed on up the river. An English gentleman offered me the use of a braided leader. I must do him the

justice to say he used but a single gut himself. Indeed he was a thorough angler of the best type, and one who, when he had overcome a fish, looked upon his ultimate capture or escape with a complacency closely approaching indifference.

It was a very fair fishing day—overcast and with wind. Seven large salmon came to my fly on that day, but every one rose short, and not one could be coaxed up a second time. Early in the day this result—or rather lack of result—was attributed to the obtrusiveness of the leader, but I stuck to it on principle expressly to test the question. This experience, it must be admitted, is rather brief to warrant any very decisive generalization. Still I formed the opinion then, and I hold it still, that this conduct of the fish was directly attributable to the character of the leader.

However this may be, it must be admitted that a good single leader is less conspicuous than one which is braided or twisted of many strands. Since, then, there is less to excite suspicion, while the temptation remains the same in either case, more fish should be coaxed to take the fly with a single than with a braided or twisted leader,—and, making due allowance for all the vicissitudes of fortune which attend this sport, I entertain no doubt that with equal skill, he that uses a single leader will at the end of two weeks' fishing score considerably more and larger fish than he who follows the other plan.

To facilitate casting, it is usual and advisable to supplement the line with from four to six feet of braided or twisted gut, and to attach the single leader to that. If the fish are to be gaffed from the shore, the entire length

of the compound leader from line to fly should be about one foot less than the distance from the tip of the rod to the reel. But if the gaffing is to proceed from the canoe, so that the distance between the angler and the gaffer is fixed and unchangeable, then this length should be abbreviated by eighteen inches or so, in order that the fish may be more readily brought within reach.

At the knots lies the weakest part of a leader, no matter how flaccid the gut may be made by soaking before they are tied. This results from that principle which we have all seen applied by salesmen in retail-shops. He makes up the goods sold into a package, binds it with twine, wraps the twine in a peculiar way about his left hand, and with a sharp jerk parts a cord with ease which could resist a direct strain that would cut his fingers to the bone. He makes one strand cut the other. Some of the leading anglers of England recommend that the leader be built up in the usual way with those sliding knots known as "water-knots;" that the knots be brought together within an eighth of an inch; and that then a whipping of silk be placed between them to act as a cushion. As usual, there are two sides to this question. After the application of the silk the knots are undoubtedly at least as strong as any other part of the leader. But the knots on a leader are already sufficiently obtrusive, and this course renders them even more so. But whether the verdict be for or against this innovation, the plan of tying the leader in the usual manner, and then whipping the projecting end of the knots down so that there is a whipping on each side of the knots,—not between,—which one often sees on salmon-leaders in this country, serves no useful

purpose. It is a positive disadvantage, and an abomination.

In my former volume considerable space was given to the question which is the best color for leaders. The results of many experiments to determine this question, extending over some months, and the manner in which they were conducted, were detailed. Nothing has since occurred to change the opinions there expressed. Referring him who is curious to know the why and wherefore to that volume, a recapitulation of a few of the results so obtained may not be amiss.

Take it at all times of the day and in all kinds of water, a leader which has been dyed with "Arnold's Writing Fluid" diluted with about half its bulk of water, will average as the least conspicuous. The tint should be light if the water to be fished is clear, but deeper if it is brown. Gut can thus be dyed without the aid of heat, and, for that or some other reason, its pristine strength does not seem to be impaired in the process. As any shade from almost black to the faintest tinge of greenish blue can be obtained by varying the proportions of ink and water, and the length of the exposure, it would seem unwise to resort to any dye that requires heat—such as the customary logwood and copperas, for example.

When the sun is near the meridian of an unclouded day nothing is less conspicuous than uncolored gut. But in the morning and afternoon, and when the sky is overcast, the ink-dye has the advantage. If apprised that the stream to be fished is clear, the depth of tint should not exceed that of the blue sky on an unclouded day.

Any leader will take salmon, more or less, as indeed I believe would be occasionally the case were the line bent directly to the fly. But I cannot doubt that he who best conceals the connection between himself and his fly will have the advantage both in number and size of fish taken, other things being equal.

CHAPTER IV.

OUTFIT—THE GAFF.

WHEN preparing for my first salmon-fishing expedition, an experienced friend sent me two tracings from gaffs which he had used, recommending them as good in form and size. Having selected that which seemed to me most conformable to the laws of mechanics as applied to the problem, as I understood it, I ordered one made accordingly. It was delivered. After stoning up the point until it was smooth and keen, it was placed among the other items of my outfit, erased from my list, and dismissed from mind.

At length the sun rose upon the long-wished-for day. At an early hour my Indians presented themselves, partly to report ready for duty, and partly to procure and fit a handle to my gaff. Tom, the name of the Indian who was to be my presiding genius, and who was generally admitted to be the most experienced and skilled in all that related to salmon-fishing of any guide in that region, when his eye lit upon the gaff I had so fondly thought was all that the most exacting could desire, changed countenance. Assuming an expression from which the ordinary observer might surmise that it tainted the very air he breathed, he took the gaff in his hands and said, "Humph! wire very thin—cut fish much." Then, grasping it by the point and shank, he straightened the

hook as though it were made of lead, and threw it down with "Humph! dam gaff no good."

Here was indeed a dilemma, and none the less embarrassing because totally unanticipated. It needed no argument or further demonstration to show he was right. It was self-evident. The proprietor of my temporary home was called into council to determine what was to be done. He at once kindly solved the problem by tendering the use of a gaff of his own. Its color, resembling that of the barrel of a musket of the last century, showed it to be a veteran, and its history, then briefly recounted, placed the number of salmon which had been its victims at a figure which I am afraid to repeat, lest I be thought credulous or guilty of exaggeration.

As Tom examined the implement his clearing countenance sufficiently expressed his approval, and rendered his sententious "This gaff all right" unnecessary to relieve my anxiety.

From the first time I ever took a fly-rod in my hands until the present day, it has always been my practice to pump men of this character until the well of their experience and information fairly sucks dry. No allegiance to any pet theory obscures their prompt perception of facts. Hard facts, and these alone, appeal to their comprehension, alone govern their opinions, and guide their conduct. Their low average of intelligence as compared with that of their employers, and their scanty information of other and outside matters, are apt to induce an underestimate of their judgment and ability within the comparatively narrow scope of their specialty. It should not be forgotten that the power of observation of these men is not only hereditary, but is trained from their earliest

childhood ; while being in close contact with the fish year after year from the beginning to the end of the season, in every possible variety of weather, stage of water, and other circumstances, and with almost every conceivable method of fly-fishing, and almost every conceivable grade of angler constantly before their eyes, their opportunities for observation far exceed those possible to any one who does not make salmon-fishing the sole business of life.

I cannot but think that he who, without intimating his own opinion, will by a system of judicious questions rub his pet theories against the touchstone of these men's great and varied experience, will find the practice of value. Fly-fishing is a practical art, and lies quite without the sphere of metaphysics. A theory thus confirmed may be relied upon with redoubled confidence ; but if contradicted, a careful review of the premises from which it is deduced will certainly not be amiss. Are we not as a class somewhat prone to generalize from a rather meagre array of facts ? If so, any check which will tend to verify a conclusion must be of value.

Through the five weeks during which Tom presided over my fortunes with the salmon, the pump was kept in constant operation. He read me some dozen lectures on the subject of gaffs, always winding up by reference to, and praise of, the veteran instrument we had borrowed.

If skill in the use of a tool makes a man a reliable critic of what that tool should be, then Tom's voice on the subject of gaffs was as the voice of one clothed with authority. During all that time there was never one single false motion, or one single mishap. He never moved till the time was opportune, and then, whether in mid-river he plunged the gaff beneath the water till but a foot or

two of its handle was above the surface, or whether he assayed the fish from the bank, it was all one. Almost before it was possible to realize it the crisis was over, and his assistant was teaching the salmon resignation by the vigorous application of a club or stone to its head.

At last I came to think this gaff was "big medicine," and that as long as we had it everything would be lovely. I coveted my neighbor's goods.

The sun sank behind the western hills as calmly regardless of the fact that it thus closed our salmon-fishing for that year, as the sun is apt to be of human affairs. It was Saturday evening, when fishing is forbidden from six o'clock until Monday morning. I had one nice fish of twenty-eight pounds in the canoe, and had raised a perfect whale to my fly. While in the midst of tendering to him in orderly succession sample after sample from my varied stock of wiles, the voice of one of the river guardians, who had been watching the proceedings from the bank with friendly interest, suggested that the time was up. I reeled in, seeking consolation in the thought that self-denial was a virtue, and that virtue was its own reward. It seemed to me the reward was rather meagre. How willingly would I have assigned, transferred, and set over all my right, title, and interest in and to the said reward, to any one for another offer from that splendid fish. But the eye of the minion of the law was upon me, and I remembered that it is recommended, "Affect a virtue if you have it not." So, turning our backs upon the scene, we poled up the river with heavy hearts.

We approached the house under the eye of our landlord, Tom lugging the heavy fish upon his shoulder. It was a beauty, and after the usual inspection and comments, Tom

carried it off to the ice-house. I was too obtuse to understand a mild suggestion from my host, that if I varied my usual practice of giving my fish to the Indians by turning this one over to him, he would find it very useful.

A hint to the wise and the wily is sufficient. As soon as his back was turned I cut the lashings that bound the gaff to its staff, and hid it in the bottom of my trunk. Having thus nine points of the law in my favor, I approached the owner of the gaff in pursuit of the lacking tenth, with that placid smile and bland demeanor which usually veil duplicity. As I expected, another mild intimation that the salmon would be useful was soon offered. But I was very doubtful what I should do with that salmon. Then I changed the subject to the gaff—where it was made and whom by, and could one like it be had, and at what cost. No sooner did he name the price than I pushed the money into his astonished hand, told him to go and have one made, and that the salmon he desired should be his for the trouble; that as a good citizen my duty to my fellow-countrymen forbade me to allow a gaff so perfect in every respect to leave my possession; that it was buried in my trunk, and that there it should remain until I arrived in New York.

When I consider the matter in the abstract, I am forced to admit it was rather a shabby return for his kindness. But when I look upon it in the concrete—on the gaff itself as it now lies before me—my scruples vanish, and I regard it with the utmost complacency. At all events, if its acquisition was a wrong, that wrong is mine, and the reader in partaking of its benefits need assume no moral responsibility therefor.

Should I say I had never seen a really good gaff in a

fishing-tackle store the statement would not be far wide of the truth. It is but another example of how difficult it is to induce a mechanic properly to make any article the use of which he does not understand. A paper tracing giving the size and curve is quite insufficient to guarantee the result, as the experience already given proves. Some little particularity in describing this indispensable part of our outfit will therefore not be amiss.

Fig. 6.—The Veteran Gaff.

The point should be keen and conical, running in the length of one inch, by a taper bounded by straight lines, from nothing to about three sixteenths of an inch diameter. From thence the thickness should gradually increase to where the hook merges into the shank, where it should attain a thickness of three eighths of an inch. The shank should be ten or more inches long, the upper six or eight inches of which should be flattened out to a width of about half an inch, and should terminate in a spur, like a short thick nail, since it is to serve the same purpose. This

spur projects at a right angle from the flattened portion in a direction away from the point, and should be about half an inch long. The gaff should be of steel and brought to a spring temper, and be of sufficient stiffness to resist a pretty strong effort to open the curve. It is important that the depth of the hook should exceed its greatest width by at least one quarter of an inch. Next to over-thin or clumsily thick wire, this lack of depth on the point-side of the gaff is one of the most common, as it is one of the most serious, of faults.

The measurements of the "veteran" gaff, of which the preceding figure is a portrait, are as follows: From bottom of hook to spur on end of shank, measured on a straight line and not around the curve, twelve inches. Width of hook opposite point, two and three quarter inches; width of hook at widest portion, three and one quarter inches; depth of hook, measured from a line drawn straight across from the point to the shank, three and nine sixteenths inches. All these measurements relate to the inner, not to the outer margin of the curve of the hook. The point-side is perfectly straight, the increased width of the hook resulting from an outward curve of the shank-side. Were I to change this gaff in any way, it would be by adding a quarter of an inch to the length of the point-side, thus making the depth of the hook three and thirteen sixteenths inches.

A gaff of these dimensions I recommend to the reader as equally adapted to secure a grilse of six, or a salmon of forty pounds. A smaller gaff may be found inadequate, a larger one is unnecessary. Thus armed, the angler cannot go amiss.

That there may be no mistake in reference to this es-

sential part of our outfit, and since our dealers in fishing-tackle seem to understand its requisites so imperfectly, I will so far recapitulate as to formulate rules for its selection or manufacture, their order indicating their relative importance in my judgment.

1st. The hook must be stiff enough to withstand a quite forcible effort to straighten it—otherwise the gaff is perfectly worthless.

2d. The depth of the point-side must exceed the width of the hook at its widest point, measuring inside the curve, by at least one quarter, better still by three eighths, of an inch.

3d. The wire must not be so thin as to cut the fish much in lifting it from the water; it should not be so thick as to be clumsy.

4th. The point should be long, keen, and conical.

5th. The gaff should be neither polished nor nickel-plated.

6th. It should be constructed to lash upon an improvised handle, rather than to be screwed into a staff to be carried with it.

7th. The point-side of the gaff should be straight.

This form of gaff is as much better than one which screws into a handle, as it is more convenient. The angler carries with him nothing but the steel. When he arrives on the fishing-ground, his gaffer cuts a handle of such length and weight as his experience and physical peculiarities lead him to prefer. He flattens off one side of one end of this, makes a hole for or drives in the spur to prevent the gaff from slipping, and binds it fast to the handle with twine. When the fishing is over, the twine is cut, the steel removed, and the handle thrown away.

With this arrangement the point is on one side of the shank of the gaff, while the handle rests upon the opposite side. Thus the whole width of the gaff is available, and there is less danger of touching the fish with the staff when placing the gaff in position for use.

It is usual to make the point-side of the gaff flare away from the shank, on the theory that when the staff is in the usual position, the point will be nearly horizontal and thus pass directly through the fish. This seems to me a mistake. The less the direction of the point departs from the direction of the force applied to drive it home, the more easily and more surely it will penetrate. The margin that intervenes between a saved fish and a lost fish, is often very small. As long as the gaff enters on one side and emerges on the other, embracing the backbone of the fish in its course, whether the two wounds are mathematically equidistant from the upper or lower margin of the fish, would seem quite immaterial. If the gaff is sufficiently wide across the bend, there is not the slightest need to set the point outward. It serves no useful purpose, while it does make the blow oblique, rather than direct as it should be.

Again: for the same reason that you would not use a bright-scarlet landing-net for trout, do not use a polished or nickel-plated gaff. The best course is first to rust the steel thoroughly with vinegar and salt, then to dry it and smear it well with oil. After allowing the oil to soften the rust for twenty-four hours, rub it as clean as possible with a rag. This gives the steel the brown color of a gun-barrel, which is as good a color as it can have.

Nothing makes a better gaff than a tooth from a spring-toothed horse-rake. The taper and size of the wire are

just about right for the purpose, and if carefully bent and carefully tempered to a spring-temper afterward, it will quite "fill the bill." They may be had from almost any manufacturer of agricultural implements.

Perhaps the aspiring trout-fisherman—for whose benefit, and not for that of the experienced salmon-angler, I am writing—will better understand the essential features of the gaff, if what has already been said be supplemented with some account of its use.

The gaff may be used from a canoe or from the bank. After the enterprise of a salmon has become somewhat subdued by the violence and duration of its efforts to escape, if it finds itself in deep quiet water it seems to become somewhat reassured. It may then permit the angler to recover line until the canoe is almost over it, seeming at times almost to regard the shadow of the canoe as a harbor of refuge. The angler of course endeavors to keep the fish as near the surface as possible. Thus a compromise may result, the salmon being not indeed on the surface, but yet not so deep but that it may be seen. Should it then afford the opportunity, the gaffer may quietly sink his gaff under the fish, and with a quick upward movement impale it and drag it into the canoe. If the operation is so sudden and unexpected that the salmon cannot protest while in the water, it loses no instant of time after it has touched the bottom of the canoe. It is necessarily deposited in the somewhat restricted interval across which the gaffer and angler face one another. The salmon, apparently galvanized into preternatural activity, performs like a cat on a stove. The gaffer hangs to his gaff, still imbedded in the salmon, with one hand, while with the other he endeavors to

secure a hold on the slippery fish by which he can sufficiently control its movements to drop the gaff and resort to the club; the blood flies in every direction from the wounds of the gaff, and generally there is what the vulgar might call "a regular circus." If it is a fair-sized fish, say of twenty pounds or over, this performance will last long after the angler wishes it were finished. It is a brutal piece of business, and after it is done and peace reigns once more, that end of the canoe looks like a slaughter-house.

If my humanity were a little greater or my cupidity a little less, I would never permit a fish of any size to be gaffed into a canoe. As it is, though I vow I never will, still when the moment comes when resolve should pass into action, since confession is good for the soul, I may confess that I prove recreant to my vow.

Not only is the proceeding more in keeping with a Spanish bull-fight than the gentle spirit of angling, but it is dangerous as well—mainly dangerous in that unless everything goes just right the fish will be lost, but still somewhat dangerous in that during the struggle the canoe may decline to be a party thereto, and discard its occupants into the water. Salmon-streams are uncommonly thin and wet, and he who plunges therein will find no just cause to growl at his bath because it is overheated.

The Mic-mac type of birch-bark canoe—that used on many salmon-streams—is a three-man canoe, in which one with a fair knack of balance can readily cast standing, as indeed many do. But it is no place for a Greco-Roman wrestling-match.

It is quite aggravating to be spilled out of any form of boat; but to so part company with a "birch," as it is

usually called "for short," is peculiarly so. A boat under such circumstances usually remains bottom up, thus seeming to share the misfortune of the shipwreck, and to sympathize with its unhappy passengers. Not so a birch. Without a premonitory symptom of impatience, and quicker than a wink, it will vanish beneath its occupant and leave him struggling in the water. And when he rises to the surface and gives his first snort of surprise and disgust, there it will stand just about where it was left, floating as jauntily as a bubble, and with hardly a teacupful of water in it—seeming to say as plainly as though its attitude were embodied in speech, "What! you don't mean to say that that was my fault, do you?"

With a boat, too, you can, ordinarily at least, find a dry spot on its bottom—perhaps even right it and climb in. But a birch, when it has once spilled its cargo, passes from the placid demureness of a cat into the friskiness of a kitten. Touch it, and it squirms and sidles off like a country-girl at a merry-making when some gallant tries to put his arm around her waist. It does not squeal, it is true; but it acts just as skittishly as if it did. Of all the floating constructions of man, to none is the application of the feminine personal pronoun more appropriate.

But after all a birch has its good points, and a good many of them; and, take it all in all, is to be preferred for salmon-fishing to any other form of boat I have ever seen. It is a little ticklish about the upper part of the ribs. But keep your hands off that part, observe due decorum, and take no liberties, and it will carry you as safely as a rocking-chair. It can be handled by two men like a top, and will back and fill, and turn and twist to face the vagaries of a fighting salmon, as though endowed with volition

and as much interested in the result of the contest as the angler himself. Moreover, it is as tight as a bottle; or if not, can be made so with a pitch-plaster with certainty and dispatch.

As a small boy can always find room for just one more piece of pié, so a salmon can always summon energy for another run. It is really wonderful what reserved powers an apparently spent fish will sometimes evince, when stimulated by the approach of the gaff, or by a maladroit application of its point to his ribs. When the gaffer lays aside his paddle for the gaff, half the adaptability of the canoe is gone, since it is controlled by his assistant alone. Should he then miss his stroke from any cause and the fish start for the next county by diving under the canoe, as it is prone to do, it is apt to be a case of good-by.

For these reasons it is advisable to gaff from the bank when possible. As any ordinarily well-conducted river has usually an abundance of that article on either side, it might seem that this was everywhere possible. By no means. Not every bank will serve the purpose. It must be one sufficiently unobstructed to permit the angler to follow the fish down stream in case of necessity—and it usually is necessary. The water near the shore must not be too deep, nor must the current be rapid, nor, again, must it be too shallow to float the fish. But, above all things, it must be reasonably free from that *bête noire* of the angler—snags and similar obstructions which can foul the line or leader. Such landing-places as will serve, therefore, become perforce well known on every river. They may be a quarter, a half, or even a mile or more apart. They may be on one side of the river or on the other, or alternate in any conceivable order.

When the fish has been brought to the proper stage of docility, the next problem is to work it down to one of these landing-places. It cannot be worked up stream by any possibility, unless it contributes thereto by its own folly. A landing-place once passed, though but by twenty-five feet, is passed for good, as far as that fish is concerned. Having at length happily arrived at a suitable place, the canoe is brought to the bank, and all disembark. Then the angler tries to coax the fish within reach. He governs the amount of the strain with the most careful discrimination, yielding to the slightest excess, and taking line upon its slightest diminution. It is a long, and oftentimes a laborious process, every phase of which the angler must watch with unflagging attention, and with all his wits about him, if ultimate success is to crown his efforts. As the fish swings in to the bank, the gaffer places himself opposite, and a little below where he expects it will arrive, motionless as though cast in bronze. The assistant skips round to find a suitable stone. At last the fish is near enough. The gaffer quietly reaches over its back till the point of the gaff is opposite its more distant side in the vicinity of the back fin, and then suddenly retracts the gaff, driving it through the fish below the backbone, and without arresting the motion, drags it on to the shore. The assistant then plies the stone, and the tragedy is over.

The foregoing is merely intended to give an idea of the process, not to furnish specific directions for its accomplishment. Until long after the angler is beyond the aid of printed instructions, he would do well to leave this delicate operation to his skilled attendant.

CLOTHING.

This is a most important part of our outfit. The American must remember that the salmon-rivers of the Atlantic seaboard lie in the direction of the North Pole. While in the direct rays of the sun it may be even shirt-sleeve weather; in the shade, and especially in the morning and evening, an overcoat will not be oppressive. The angler, therefore, should clothe himself like an onion, and be prepared to peel layer after layer as the day advances, and resume them in due order as the day declines. Especially is this true when the fishing is from a boat. A boat to him who takes no part in its management, is about twenty-five degrees colder than any other known place in the same latitude. Good heavy winter underclothes, a flannel shirt, and winter trousers should form the foundation, and upon these should be reared such a superstructure of cardigan-jackets, dog-skin coats, and overcoats, as the exigencies of the occasion may require.

Be comfortable, and take whatever it is thought will conduce to this end. As long as your own back is not of necessity the means of transportation, in the matter of clothing, at all events, take all that you may need. Roughing it is all very nice for the young and inexperienced to talk of when cushioned in an easy-chair before a cheerful fire; but after a somewhat extended personal experience on my own account, and a wide observation of others, I have yet to see the person whose appetite was not more than satiated at the very first taste of the real article. A salmon-fishing expedition should be for pleasure, not penance.

A cheap felt-hat of a gray color should protect the

head. It should be thick enough to laugh at the rain, wide-brimmed that it may drip elsewhere than down the back of its wearer's neck, and soft so that he may adjust it at any angle that the driving storm or the rays of the sun may require. Stiff hats are a nuisance. If such that they may be worn without embarrassment in every-day life or when travelling, they are ill adapted for fishing; while if adapted for fishing, he would indeed be a bold man who would be willing to wear one except when fishing. They are most inconvenient to pack in a trunk both from their size and shape, and though brand-new when they enter, will look when they emerge as if they had been through a free fight.

A good rubber-coat is a necessity. The rubber-coat is often misunderstood, and therefore maligned. We have all seen the moisture condense from the atmosphere on the outside of an ice-pitcher. The same process takes place inside a rubber-coat. The rain cools the coat, and condenses the insensible perspiration from the body upon its interior. Thus a coat is abused as leaky which is really as tight as the ice-pitcher itself. The best rubber-coat ever made will show a wet inside under these circumstances. Coats of this description may, however, now be had in which this annoyance is met with either in a diminished degree, or not at all. This is accomplished by perforating the shoulders and upper part of the arms, and providing the coat with a short cape to exclude the water from the openings. The air is then no longer confined within the coat, the motion of the arms and body, theoretically at least, keeping up a constant circulation, and expelling the warm air before its moisture has time to condense.

Some means must also be provided to protect the legs if the fishing is from a boat. A rubber-petticoat, reaching to within four or five inches of the ground, is altogether the best device for this purpose, since it prevents the wearer from discomfort should a puddle form on his seat, as it is apt to do, and also because it is well ventilated, and easy to assume and discard. The rubber-coat should then be short. Still rubber pantaloons, or even a rubber-blanket, will answer very well. But some such protection is necessary, for no salmon-fisherman remains indoors because of rain when the fish may rise. Rubber-boots, which may well be of the ventilated variety, are also advisable. When venturing into the rain, if the sleeves of the rubber-coat are not provided with straps for the purpose,—as they should be,—fold each sleeve tight around the wrist, and tie them thus with a piece of twine. A rain-gauge, even though formed of the sleeve of a rubber-coat, is superfluous in salmon-fishing.

If wading is necessary, mackintosh-waders coming well up under the arms are advisable. The water will be found too cold to wade day after day with comfort or impunity, unless so protected. Those ending in stocking-feet are the best. With this caution, every trout-fisherman will understand this matter without further dilation.

Every one has heard of the black-fly. Those who have not had the pleasure of its personal acquaintance and who judge solely from the fame of its exploits, imagine something about the size of a turkey-buzzard, and armed with a proboscis like the sword of a Roman gladiator. This is a mistake. It is a most insignificant-looking little gentleman, considerably less than a quarter of an inch long. But

if its appearance does not inspire respect, its action speedily will. It has a cousin, a most diminutive creature, hardly larger than the head of a pin, and so colorless as to be almost invisible. It also is a hero, and that of no mean sort. To his honor the mosquito none of us need an introduction. He stands on no ceremony, introducing himself on sight, oblivious to insult and rebuff.

Were it not for these drawbacks, salmon-fishing would be altogether too good fun for mere mortals. They are to be found in greater or less quantity on every salmon-river during the fishing season—almost absent where the banks are settled and cleared, becoming more and more abundant as the wilderness is penetrated.

The black-fly performs by daylight alone. Not until the sun is well up does he venture out on his daily avocations, and before the cool of the evening he returns home again in a most virtuous fashion.

His little cousin, on the other hand, has its business-hours in the early morning and the gloom of the twilight, though if the day be warm, damp, and gloomy—"muggy" weather in short,—he may be on hand all day long. It shuns the bright sun, for its deeds are deeds of darkness.

Both abominate the wind and vanish before it, but their weather-eye is always open, and no lull, however brief, is allowed to pass unimproved.

Should an unprepared unfortunate chance upon them when in force, though he have the hide of a rhinoceros, and the enthusiasm of Father Walton himself raised to the twenty-fourth power, neither will avail him anything. He will be subject to attacks so pertinacious and unendurable, that the necessity of self-preservation will speedily banish all thought of fishing.

The black-fly views its victim with an eye which shows a thorough knowledge of its business, and selects his tender points with the very nicest discrimination. Behind the ears, upon the eyelids, and on the forehead are its favorite feeding-grounds, and for the possession of these it will do and dare anything.

The little fellow is more miscellaneous in its views, but it is by no means the more lovable on that account.

Both bear down on their prey in numbers like the hordes of Ghengis Khan—as the sands of the sea-shore in multitude. The slaughter of a few thousand more or less, if a matter of the least moment, is but an occasion for self-congratulation to the survivors in that it gives them a better chance. Let no man in the vicious pride of his youth and strength fancy that he can defy their attack, for they will rout him at last, horse, foot, and artillery, just as surely as they meet him. A thin skirmish-line he may be able to encounter though with discomfort, but a serious attack in force is beyond human endurance.

It is true different people suffer in different degrees. On some the black-fly will bring blood at every prod; on some each bite raises a swelling like a miniature volcano; others experience an intolerable itching; while others suffer all these, or any part of them, combined.

The bite of the little fellow is more uniform in result. It is followed by a burning itch, which makes one wish he could stretch his skin out on some barn-door, and go for it with a curry-comb.

Therefore, if the answer to the interrogatories set forth in Chapter I. discloses that these pests are to be met with, though neither abundant nor very troublesome, prepare for the very worst. You may be sure their prev-

alence will not be exaggerated "the fortieth part of one poor scruple;" and if disappointed, and your precautions are thrown away, it is certainly a most agreeable disappointment, over which few tears need be shed.

Head-nets, to go over the hat and tuck in under the shirt-collar, are to me almost as intolerable as the insects themselves. Everything looks blurred, there is an intolerable sense of suffocation, and smoking is impossible. The following will be found equally efficient, and decidedly more agreeable:

Sew around the lining on the inside of the hat, a curtain of cotton or linen cloth about ten or twelve inches deep. Cut a hole in the front of the bottomless sack thus formed, so that the face will be exposed from the eyebrow to the chin. Put on the hat, adjust the curtain so that all of the head but the face is covered, tuck the lower edge of the curtain well down under the shirt all around the neck, and tie a handkerchief around the shirt-collar. The flanks and rear are now protected, and the front alone is exposed. Or, should this have been neglected, a defence may be improvised in the following manner, though it is neither as perfect a protection nor as comfortable to the wearer: Hold up a large handkerchief by the corners, so that the upper edge is horizontal. Knot the corners which are held together. Place the bag so formed upon the head so that the knots come over the forehead. Put on the hat, tuck the hanging part under the shirt, and tie around the shirt-collar as before.

For the hands, provide a pair of old kid-gloves two or three sizes too large, and cut off the fingers. Sew linen gauntlets to these reaching well up toward the elbow, the margin of each of which is provided with an elastic cord

short enough to pucker the mouth well together. Pull on these gloves, and draw the gauntlets well up over the coat-sleeve. Be sure that no open place—such as that usual on the lower part of the palm of a kid-glove—is left. The cloth must cover every orifice, or the pests will enter the opening in a procession, and roam at pleasure, wreaking their wicked will upon their victim, utterly undismayed by his array of armor. Kid-gloves are advised because they are sting-proof. If the fingers are cut off no inconvenience in using the hands will be experienced. They need not become wet, since all these creatures know enough to go in when it rains. But the finger-tips and the face remain to be protected.

The soothing pipe will here add another to the long list of blessings which it bestows on mankind. But it merits and should receive its stated periods of repose. We should not crowd a really good thing too hard.

Therefore cause this lotion to be prepared, recommended to me as really sovereign by one who had annually faced the foe on the salmon-rivers of Canada for nearly forty years:

Olive-oil	½ pint.
Creosote	1 ounce.
Pennyroyal	1 ounce.
Camphor	1 ounce.

Dissolve the camphor in alcohol, and mix.

This will be sufficient in quantity for a party of four. The bottle which contains it may find place in the grand depot of supplies. For daily use in the field, each should be provided with an oval ounce-bottleful, to be carried in the pocket at all times, ready for any and every emer-

gency. When exposed to attack, the cork is removed from time to time, and a little of the contents of the bottle is smeared on the face with the fingers. The face need not be covered. A little here and there will suffice. Indeed, if the flies are not very numerous and aggressive, it will be enough to anoint the cloth near the face. Though not what a particular man would select as a perfume, still it is not disagreeable—certainly not when compared with fly-bites. It is a cleanly fluid, does not discolor or disorder the skin, and is readily removable by the ordinary process of washing.

The generic name for mixtures of this kind—at least throughout the wilderness which intervenes between the settlements of Maine and Canada—is "bug-juice." Human life is thought to be too short by the ranger of the wild-woods, and the articulations of his jaws are too inflexible for the terms "insect-repellant," "culexifuge," and the many other appellations in vogue in the settlements.

Many stories, duly equipped with a moral, come to us from a life destined soon to become historical only.

Many of my readers have perhaps heard the following:

A Western ranger, festooned with pistols and bowie-knives like an Algerine corsair,—at least like the Algerine corsair of the picture-books,—when asked what in —— he wanted to ballast himself that way for with such a lot of old iron, replied that though a nuisance to carry, and though he wanted them but seldom, yet "when he did want them he wanted them mighty bad; that it was better to be fixed."

We may with profit apply this moral to a mosquito-

net. Mosquitoes are more or less abundant on every salmon-river. Though primarily a night-bird, they are ready for business at almost any time, giving themselves but little ground for self-reproach because of neglected opportunities. When the sun shines warm and bright, or when the nights are clear and cold, they retire into privacy to think over their sins. At all other times they go about like a roaring lion, seeking whom they may devour.

During the day-time the angler who conforms his practice to the preceding precepts may laugh at them. But to sit up all night to apply "bug-juice" at stated intervals, or to spend the hours which should be devoted to repose either in active hostilities or in weeping amid the fumes of a smudge, will be found very inconvenient—far more so than to carry the insignificant bulk and weight of an unnecessary mosquito-net. It may not be needed, but if wanted it will be "wanted mighty bad." It is "better to be fixed."

Select a fabric of the finest mesh, and have it made up as follows. Do not rely on a mere sheet. The mosquito of the wilderness is a persevering rascal, by no means easily discouraged. When its path is barred, it will prospect for a passage all the night long with the perseverance of a gold-hunter. And should it find entrance, it will raise a hullabaloo of triumph that will banish sleep as effectually as would a ducking in a mill-pond.

The mosquito-net should be fashioned on the model of a box with the bottom up. It should be two feet wide, and anywhere from three to six feet long. The sides should be three to four feet deep. Where the sides join that part which corresponds to the bottom of the typical box,

the seam should be reinforced by an inch-wide tape running entirely around the structure. At each of the four corners a brass ring should be securely sewn to the tape, and the net is suspended by strings fastened to these rings. The line of the angler will indeed have fallen in unpleasant places if he cannot at least find four sticks to which these strings may be attached.

This insect problem is a serious one. Sooner or later it will be forced on the attention of the salmon-angler. If he prepares for it at home, he may face the issue without apprehension, and will experience little or no discomfort. If he neglects to do so, he will pay dearly for his temerity. There are, it is true, some wide rivers, the banks of which above tide-water are well cleared and cultivated, where this annoyance is comparatively insignificant, and where no precaution is required. But, like the rivers of Paradise, they are few in number. Comfort in life is made up of little things. We can all bear a sudden pang if it be but momentary, with comparative equanimity. But relentless persecution, though no single moment in itself be so very severe, is quite another matter. No man can fight flies, and fight salmon at the same time. Grave as the situation may be to him who is unprepared, there is nothing in the presence of flies in any possible abundance to deter the angler from salmon-fishing. The fear of hunger might also, and as well, cause him to linger at his own fireside. Either may be provided against, and, timely precaution having been taken, he may go on his way fearing nothing from either.

CHAPTER V.

FLIES AND HOOKS.

FLIES.

He who seeks to inform himself from books which are the best flies for salmon-fishing, will hardly fail to find food for serious thought on the value of human testimony.

He will encounter almost as many opinions as there are books treating on the subject, many of them as utterly irreconcilable one with another as a tom-cat and a terrier.

Perhaps the first advises a different fly for every change of water, sky, or locality. No sooner has the reader reconciled himself to buying at least a quart of flies, than he finds another insisting that three varieties are all-sufficient under all circumstances and conditions. He is naturally, if unprepared, somewhat astonished. The question seems to lie not within the realm of metaphysics, in which difference of opinion is almost a matter of course, but to relate to mere records of, and deductions from, actual physical experiment. He seeks corroborative testimony, and merely sinks deeper in the mire of uncertainty. He finds some advocating gaudy flies, and others repudiating all but those of sombre hue; some insisting on the use of light and bright flies in dark weather and heavy water, and others claiming that this practice is all wrong and that the true method is exactly the reverse, and so on.

What is the matter? These gentlemen are all men of

experience, and are speaking from experience, yet though unquestionably truthful, they are at complete variance with one another.

That there is reason for it all, I cannot doubt. To attribute the conduct of the salmon in this respect to mere caprice is not satisfactory to my mind. Caprice is an individual trait. A characteristic common to an entire species must rest on some more substantial basis. Caprice, too, is a characteristic of the higher, not of the lower orders of life. Man builds in every conceivable way, but every bee makes every cell hexagonal.

The mental range of a fish is of the most limited description. If more than four impulses—physical comfort, self-preservation, hunger, and the desire to reproduce—govern their conduct, I have yet to hear it suggested. Under precisely similar circumstances and conditions, one man may stay at home and another go a-fishing. But when we descend the scale of the animal kingdom to the low nervous development and narrow life of a fish, mental action of so high an order and so individual as caprice seems to me out of the question. Under precisely similar circumstances and conditions, I believe every fish of a given kind will act in precisely the same way; and that this does not always appear to us to be the case, is due, I am decidedly inclined to believe, rather to our own ignorance than to the idiosyncrasy of the fish.

Not only do I believe that there are reasons for the varying conduct which has given rise to these discrepant opinions in regard to the selection of flies for salmon-fishing, but I believe that a knowledge of these reasons is by no means hopeless.

One thing, however, seems certain. Abstract deduc-

tion from mere surmise as a basis, is not the way to arrive at that result. By abandoning this method of investigation for that of direct physical experiment, man has acquired more sound knowledge, and has advanced more in the last two or three centuries than during all the rest of the known history of the race. By applying the same method to the investigation of this problem, analogy warrants us in hoping for a like successful issue.

The many who regard this question as having no further bearing than upon the degree of success that some idle angler may attain, will naturally think it so trivial that its serious study and discussion merit little more than ridicule. This, it seems to me, is the view of but a shallow mind, and one oblivious to the teachings of the past. It is the ever-increasing knowledge of nature and its works which has made this century so preëminent. He who first discovered that heated water gave forth an elastic vapor, or that an electro-magnet would attract an armature, had little thought that the application of either discovery would revolutionize the intercourse of the world. No man can foresee what may follow from any discovery in the realm of nature. Five hundred investigations may be utterly barren of result and so much waste labor, but the five hundred and first may be indeed a prize which will confer untold and unexpected benefits upon mankind. It is possible—indeed probable—that the practical value of this matter has been correctly appraised in the beginning of this paragraph. But it may result in discoveries which will affect the fisheries of the world. The bare possibility warrants the effort.

Such experiments as my scanty leisure and opportunities have enabled me to conduct, I have tried in the hope

of throwing some light on the question. They are not the best nor the most conclusive methods I could devise, though they are the best and most conclusive methods my limited time and facilities permitted. Of these experiments I propose to give some account. Upon the facts the reader may rely. On the value of my deductions from these facts every one can pass for himself.

How the fly really appears to the salmon seemed to me to lie at the root of the matter, and to ascertain this, if possible, I addressed my attention.

Though we cannot say with the absolute certainty of mathematical demonstration that a rock or snag in a river-bed appears to a salmon as what we know and describe as a rock or snag, since we cannot change ourselves into that fish; still the probabilities seem to me so overwhelmingly in its favor, that, in the absence of direct and incontrovertible proof to the contrary, I see no other course open to a reasonable man than to conclude that such is the fact. If this is true as to rocks and snags, it must also be true as to flies, since the same principles govern in both cases.

In my former volume, "Fly-Rods and Fly-Tackle," I gave my reasons for this view at some length, concluding thus: "Light is light, and by its aid all animated beings see, and in its absence all alike are blind. The laws of nature operate equally and invariably both above and below the water; and until it is demonstrated to be otherwise, I cannot think that trout see in any different manner or by any different means than do we. There is probably a difference in degree, but I cannot believe in kind."

As far as my limited skill as an anatomist enables me

to judge, I can detect no difference of structure between the eye of the trout and that of the salmon, which would lead me to infer that there is any material difference in their functions.

Some time ago I caused a tank to be constructed for the purpose of experimenting on the colors of leaders, the results of which investigation were given in my former volume. The reasons and experiments there given, which led me to devise that apparatus, led me to use it in the present instance, and to have faith in the results so obtained.

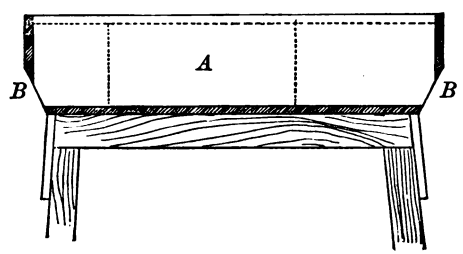

Fig. 7.

In the preceding figure *A* represents the tank, which was five feet long and fourteen and a half inches deep, measured on the inside. Where the bottom met the ends, apertures were formed three inches high and the width of the tank, which were closed with plate-glass, *B*. When the tank was in use, the head of the observer and the end of the tank, as well as the glass at the opposite end, were so wrapped in black rubber-cloth as to exclude all light except such as entered through the surface of the water.

To the end of a salmon-rod tip a piece of copper wire,

in shape like an inverted T, was secured by a freely movable joint. To the cross-piece of the T the flies to be examined were secured by pieces of very soft iron wire, about the thickness of a fine sewing-thread. The joints at the points where the iron wires were secured to the copper wire, as well as where they were attached to the loop at the heads of the flies, admitted of perfect freedom of movement. Six flies could thus be simultaneously compared.

It was thought best to choose well-known flies of uniform size, and by a well-known maker, for experiment.

Flies tied by Forest of Kelso, Scotland, on No. 1 O'Shaughnessy hooks were therefore selected, of the following varieties: Jock Scott, Durham Ranger, Silver Doctor, Silver Gray, Butcher, Black Dose, and Black Fairy. Subsequently a Fiery Brown was added, necessarily by a different maker, as none of the former make were procurable. It was, however, of the same size, and may be described as follows: Tail, topping; butt, yellow silk; body, fiery-brown pig's-wool; fiery-brown hackle tied palmer-fashion; gold tinsel; wings, brown mallard; horns, yellow macaw; head, black hurl. Many other varieties were tried as well, but it will be sufficient to confine our attention to these.

My first effort was addressed to determine whether the salmon did mistake the fly for a minnow or shrimp, as by many supposed. My belief that salmon take the fly as and for food, and for no other purpose, has been elsewhere stated, together with the reasons upon which that belief is based.

Unfortunately no shrimps were to be had during the period when these experiments were in progress. Min-

nows, however, were obtainable in the form of "whitebait," believed to be identical with the English fish of that name. They were silvery in color, except upon the back, which was light olive-green.

The sky was entirely overcast and leaden in color, with rain. The water in the tank was in what would generally be considered first-class fishing condition, *i.e.*, very slightly turbid, the tank having just been filled. A whitebait was selected of the same length as the wings of the flies, and suspended in like manner from the copper wire, with two flies on each side. Throughout these experiments the flies were manipulated two or three inches below the surface of the water, as is customary in salmon-fishing.

A marked apparent increase in the size of both fish and flies when submerged, over that in air, was first noticed—an apparent increase of one half, if not somewhat more.

At the extreme further end of the tank the whitebait was unmistakably a fish, and nothing else. As long as the flies were sufficiently near the observer to enable him to distinguish their details of construction, they bore not the faintest resemblance to the fish. But when moved to the farther end of the tank, the bodies of all, except those of the Silver Gray and Silver Doctor, disappeared altogether. Then, when those flies were moved which were provided with mixed wings of which the crest of the golden-pheasant formed part, the wings seemed to flash with reflected light in a manner and with an appearance not unlike that of the fish. The effect was extremely beautiful to my eye. It was like the intermittent flash of a firefly, lighting up the closely con-

tiguous water with a mellow glow, yellower in color, and by no means so pronounced and incisive as the flash of the minnow. Mere inspection would, I believe, fail to enable any one to determine the nature or form of the object; but something was there softly luminous, and endowed with motion and apparent life. Had it been possible to view the fish through a thicker stratum of water than that of the five feet which the tank contained, I could not question that as its form became more and more obscure, its resemblance to such flies would become more and more marked.

This experiment was repeated again and again under the same, and different conditions of light and water. If the investigation had any value at all, it demonstrated that only when either from the size or color or distance of the fly from the observer, its details were undistinguishable—then, and then only was it possible for anything with eyes to mistake the fly for a minnow.*

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* Since writing the above, shrimp were obtained and tried in the same manner.

The experiment was not altogether satisfactory, since I could not get the shrimp to the tank alive. Though quite fresh, yet they seemed to me more opaque and somewhat grayer in color than when in life. That exactness of condition so desirable in an experiment was therefore wanting. Still, I think the difference was hardly so marked as to deprive the results of all value.

It may be—indeed I judged it probable—that salmon may under some conditions mistake some flies for shrimp, but it can only be through a thicker or less transparent stratum of water than the five feet of my tank. Under no circumstances could I detect more than a suggestion of a resemblance.

For the benefit of my English readers, should I be so fortunate as to have any, I might say that the shrimp experimented with were

Whether the full blaze of an unclouded sun fell on the water, or whether the sky was like lead and the hour late, at all times and under all circumstances light colors were far more conspicuous than dark. This was to be expected. All non-luminous opaque bodies are visible solely by reflected light, and the more perfect the reflecting surfaces, the more light will reach the eye, and the more visible they will be. The silver bodies of the Silver Doctor and Silver Gray were the most obtrusive, then yellow, including golden-pheasant crests, jungle-cock neck-feathers, the darker color of golden-pheasant tippets, reds, browns, and blacks, in the order given. With a rain-sky, only the butt of the brown mallard wing of the Black Fairy where it merged into the gray could be seen at three feet, while all but the wing of the Black Dose disappeared as well. The Fiery Brown could be seen a little farther, and a little beyond this the Butcher disappeared. Those flies having a mixed wing with a golden-pheasant crest topping, or light colors in the body, were at the same time quite visible the entire length of the tank.

Swan's feather and goat's beard, both dyed yellow, were added to the wing of the Black Fairy, to test their respective values as substitutes for the expensive golden-pheasant crests. Both lacked the peculiar sheen of the crest, and were thought to be decidedly inferior.

Mention is hereafter made that objects situate without the water are only visible to fish within a circular area,

those frequenting the waters in the vicinity of New York City—a rather translucent creature about one and a half inches long, and not materially different, as I am informed, from the shrimp of England.

the centre of which lies directly over the fish, and the diameter of which is to the depth of water above the fish, as twenty is to thirteen. Within this area surrounding objects were clearly visible to me, while other portions of the surface were always as opaque as a stone wall. When the flies were displayed within the transparent space, it was almost impossible, with one exception, to distinguish one variety from another, no matter how widely their characteristics might differ. When a comparatively dull-colored object is viewed against a bright light, the vivid impression of the background swallows up that produced upon the retina by the more feebly illuminated intervening object; and to this was the result attributed. The Fiery Brown here showed decided superiority. Its peculiar-colored hackle, wound the whole length of the body, fairly burned with transmitted light.

When the flies were examined looking toward the sun, somewhat the same effect was produced, and by the same cause. No matter how clear the water might be, at four feet, their characteristics became obscure. If the observer then changed his position to the other end of the tank, so that the sun was at his back, every detail of construction, even to the hook itself, was plainly visible the full length of the tank. In the one case the illuminated side was viewed against a dark background; in the other case the shaded side was seen against a bright background. The difference was very marked when the sun was on the meridian of the tank, diminishing gradually as it bore more or less to one side.

The jungle-cock neck-feather, employed so frequently upon the cheeks of flies, was a very conspicuous feature at all times when anything beyond the flash of the crest-

feather of the wing, or the sheen of the silver bodies could be seen. When a dark-colored body was visible the hook was invariably at least equally conspicuous. Silver tinsel appeared to be more efficient than gold, as might be expected from its higher reflecting power, though both held their own well.

This summarizes such results of these experiments as seem to me to be of general interest, and which I am willing to characterize as facts.

Applying them to the many and apparently irreconcilable differences of opinion in regard to the varieties of flies preferred by salmon, and bearing in mind my belief that salmon take the fly as and for food, it seems to me an explanation may be found which goes far toward accounting for many of these apparent discrepancies.

When would we naturally expect the salmon to take the fly? Clearly when, though visible, it resembles as little as possible what it really is—a flower of fancy and no production of nature. We find these conditions filled when the size or colors, or both, of the fly are so adjusted to the depth and transparency of the water and the light which falls upon it, that the details of the fly are obscure, and only the general effect of a living and moving object is produced. Should the attention of a salmon be then directed to the fly, how can it do otherwise than attribute the effect produced to that living object, with which it is familiar, which most closely resembles it? And should that familiar object be one which appeals to its appetite at the time, the salmon would then naturally, as it seems to me, make an effort to take it.

On the other hand, should the fly be so large, or its

colors so pronounced that the conditions of light and water enable the salmon to so analyze its structure at a glance as to preclude the exercise of its imagination, then it seems reasonable to suppose they would recognize that the fly was nothing which concerned them, and that they would ignore its presence.

If we now compare what ought to follow from this assumption of fact with what we know actually does take place, it seems to me we shall find the results in accord.

Experience has taught us that in the early season and in turbid water, or in dark and windy weather, larger flies and those of a more striking hue are successful. The greater depth of water, and its diminished transparency, or the feeble illumination of the fly, would lead us to expect this, since the details of construction are then obscured by a comparatively thin stratum of water, leaving full play to the imagination of the fish.

We also know that when the water is low and clear, and untouched by wind, while the light is strong, that then smaller flies of less obtrusive character alone will move the fish, if indeed even they will do it. This, too, should result from our theory.

If we also take into consideration the marked degree in which the visibility of the fly, and consequently the power to analyze it, depends upon the direction of the sun with relation to the fish, we will find, it seems to me, at least a probable explanation of many other facts of the same kind. We have proved experimentally that when the sun is at the back of the observer, the make-up of the fly is plain for a comparatively long distance; while when the sun shines in the observer's face the fly speedily becomes obscured.

I draw from these considerations the following practical deductions.

I believe that salmon only take the fly when its details are obscure, and when there is room for the imagination of the fish to clothe it with the attributes of some object with which it is familiar, and for which it has an appetite at the time.

That it may be urged against this that there must be some point during the progress of the fish toward the fly where every detail is apparent, I have not overlooked. Sometimes salmon rise to the fly and take it. We are all as familiar with the phenomenon of salmon rising "short" —rising at the fly, yet refusing to take it—as we desire to be. That in the one case the permanence of an already fixed impression and the eagerness of pursuit blinds them; while in the other, that the lesser ardor of a more languid appetite prompts a more cautious advance—is a satisfactory explanation to my mind. Indeed, the fact that salmon do rise "short" at all seems to me confirmatory of the theory.

When salmon rise short, or when they refuse to rise at all, I believe it is either because the fish see too much of the fly, or because they can mistake it for nothing for which they care at that particular time.

These two principles, if valid, would seem especially to commend themselves to the beginner. They do not, it is true, direct him infallibly to the exact fly which will best suit every occasion, but they will guide him in the direction in which it may be sought. The particular thing which a salmon may fancy at that moment, if it fancies anything, is largely a matter of guesswork, to be determined, if at all, by the experience of others with the

run of the fish which frequent that water. But if these principles are recognized and acted on, he has a definite rule to direct him—something at all events much better than mere random experiment.

He then studies the stage and state of the water, the character of the light, and its direction with reference to the fish, which of course are always headed up stream, He assumes that the fish lie near the bottom. He then selects from among the flies which experience has shown to suit the fish of that water, one which in size and color he judges would be visible for some distance, yet the details of which he thinks will become apparent only after the fish has progressed in its approach toward the fly. With this he begins, using a larger fly in deep or much troubled water, and a smaller one where it is shallow or smoother, always striving for the golden mean between visibility and obscurity, wherein lies success.

Should a fish rise, yet rise short, he attributes its action to a definite cause; and, after a brief delay that its distrust and disappointment may subside, offers it a smaller fly of the same kind. He has erred on the side of visibility, and tries the smaller fly as necessarily more obscure. Should that fail, he rests the fish again for the same reason, and tries a fly one part of which—say the body—is still more obscure. Or, to be more precise, assume that the fish first rose to a Jock Scott. He tries it the second time with a smaller fly of the same kind; and that failing, resorts, perhaps, to a Black Dose, the wing of which is as conspicuous as that of the other fly, while the body and hackle are much less so.

In short, he knows what he is trying to do, and, study-

ing the surrounding circumstances, uses his brains to accomplish the desired result.

It may be well to add this to the results of my experiments already given. Though I could not imitate the motion given to a salmon-fly to my entire satisfaction, still I was able to do so sufficiently to make me feel pretty confident that the opening and closing action of the wings, which salmon-flies are supposed to have when properly manipulated, is usually somewhat overestimated, and by no means of as much consequence as the flashing of the mixed wings, particularly of those of which the crest of the golden-pheasant was a constituent. I have already spoken of the strong impression their appearance made upon me. It seemed to me that this appearance was more facilitated by vibrating the tip of the rod rather slowly in the usual manner, than by moving it steadily, or vibrating it rapidly.

A discussion of the choice of salmon-flies naturally divides itself into two branches: First, the selection of a particular fly to suit a particular occasion when in presence of the fish; and Second, the selection of a stock of flies preparatory to a trip, as part of the outfit for that trip.

The first we have already disposed of to the best of our ability. The second remains to be considered.

The reader will find a sound practical rule for this purpose foreshadowed in the imaginary letter in our first chapter. Ask the person from whom the fishing is leased what kinds of flies and of what sizes have proved the most successful upon his water during that portion of

the season in which it is proposed to fish. Though possibly this may not disclose the very best possible fly for that water and time, it is sure to name some that will answer very well. But to render the inquiry of value, the size as well as the kind should be included in the interrogatory; and, since both will vary during the season, the question should be specifically limited to the time when it is proposed to fish.

If this guide is unavailable,—if the reader intends to try the Penobscot, for example,—the next best course would appear to be to select such flies as the majority of salmon-anglers unite in commending, if such there are. Though almost every authority has his individual preferences which may not be included in the following list, still few, if any, mention the flies therein contained without praise. With the Jock Scott, Silver Doctor or Silver Gray, Durham Ranger, Popham, and Butcher for the higher-colored flies; and with the Black Dose, Fiery Brown, Brown Fairy, and Black Fairy, for those of more sober hue, in his fly-book, the beginner may venture on his proposed trip without apprehension. He should have at least two—better still, three—sizes of each. If early in the season, he should be supplied with flies tied on hooks $1\frac{9}{16}$ and $1\frac{6}{16}$ inches long, while during the latter half of the season those on hooks $1\frac{}{16}$ and $1\frac{2}{16}$ inches long will probably be more useful. This is the general rule. But freshets or abnormally low water may render the flies usually appropriate to one part of the season, preferable in the other. It is safer, therefore, to be provided with the three sizes.

Salmon are by no means so destructive of flies as trout. Six flies of each kind of each size, if leaders tested to eight

pounds are used, will doubtless be sufficient for a month or six weeks' use. If it is decided to economize in quantity, the sacrifice should be on one or the other extreme of the scale, according to the season, and not in the middle; while if the number is to be reduced, select in the following order: Jock Scott, Silver Doctor, Black Dose, Brown Fairy, Durham Ranger, Fiery Brown, Butcher or Popham, and Black Fairy. But always have plenty of Jock Scotts. It holds the rank among salmon-flies of the Brown Hackle among trout-flies, in that it is universally applicable to any and every water with good effect. The patterns tied by Forest, of Kelso, Scotland, seem to be preferred in this country, and they are certainly both tastefully and durably made. The varieties above named and of the make indicated are well known, and can be obtained of any extensive dealer in fishing-tackle.

HOOKS.

Next in order comes the all-important question upon what form of hooks should our flies be made.

I entered quite fully into the mechanics of the fish-hook in my former volume, "Fly-Rods and Fly-Tackle." Without repeating what was there said, the rules which are my guide in the selection of hooks are offered for what they may be worth, together with a brief statement of the reasons upon which they are based.

I first place the hook on a level surface, the glass show-case of the salesman for example, in the position shown in the following figure, in which *B C* represents the level surface.

Fig. 8.

I then construct in imagination the parallelogram *b c d e*, of which the barb-side of the point, *a*, is the diagonal, as shown in the following figure.

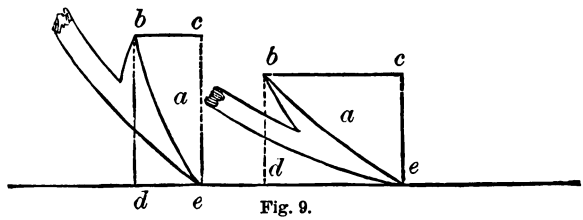

Fig. 9.

Then, unless the side *b c* considerably exceeds in length the perpendicular *c e*, the hook is condemned. It is obvious that the barb shown on the left-hand side of the figure is much more likely to rake its way out of a fish's mouth than that on the right hand, while the latter will bury sufficiently to insure a good hold if it buries at all. Therefore in certainty the right-hand barb is superior, while practically equal otherwise. The shorter the side *b c*, when compared to the side *c e*, the more defective is the hook in this respect, since when the side *b c* becomes nothing there is no tendency to penetrate at all. The relation of these sides of the parallelogram to one another expresses the certainty of the hook to bite; and therefore the rule as given above.

The shape of the point, including that of the barb, is next considered. Easy penetration is here the desideratum. A needle will penetrate more readily than a brad-awl. The point should be conical that it may enter easily, as in *A* in the following figure; and long, that a fairly prominent barb may be given without making the hook "hollow-pointed," as in *B*.

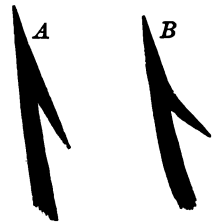

Fig. 10.

It needs no argument to show that much less force will bury the point *A* beyond the barb than will be required by the point *B* for that purpose, while the difference in holding power is not material if the hook is otherwise properly constructed.

Next, the wire should not be cut over one third through in forming the barb. This is a most common fault, particularly in "hollow-pointed" hooks. If then the point comes in contact with a bone, or if a powerful fish wrenches upon it, the point is apt to break off at the cut. It is far better to have a smaller barb that will stand up to its work, than a larger one which is pretty certain to fail the moment a really good fish is fastened.

Next, the hook should be deep on the barb-side. The play of the fish should be away from the point of escape

—not on its very threshold. The barb should come into use but seldom, and then only to withstand some momentary and unusual convulsion of the fish. Otherwise every struggle is a direct strain upon the barb, necessarily a weak spot, since the wire is there partially divided.

Lastly, the wire should be heavy enough so that the hook will not open much, if any, when the point is engaged in a block of wood and the shank is pulled upon. For if the hook springs open under these circumstances, of course the form of the bend is at once changed, and a hook which would meet approval under the rule first given might so vary in use as to become exceedingly defective.

The O'Shaughnessy, the Limerick, and the Sproat are the forms of hooks most used in salmon-flies in this country. Assuming these rules to be valid, as I believe them to be, if we apply them to these hooks we shall obtain the following results:

The tendency of the O'Shaughnessy to penetrate is very fair, though not as good as the Sproat. The shape of the point is also usually good; the wire is not cut too much in forming the barb; it has fair depth on the barb-side, though inferior to the Limerick in this respect; and the wire is heavy enough.

The Limerick has not the certainty of either the Sproat or the O'Shaughnessy. The barb is bad, since not only is it "hollow-pointed," but the wire is usually cut half through in its formation. To offset this, it has the greatest depth of any on the barb-side, so that the fish plays at the greatest distance from the point of escape, while the wire is heavy enough to prevent the hook from changing shape when the point becomes engaged.

To criticise the Sproat is difficult. Every manufacturer seems to make a hook which he calls a Sproat, and the market is flooded with hooks under this name, no two of which are alike. For some years I have been unable to obtain the form upon which the Sproat made its reputation, and which was really a good hook. Some of the recent types have every defect a hook can have—some of them more, some of them less. But all of them seem to have one feature which should preclude them from use against a fish which fights so long and so hard as a salmon—they are very short on the barb-side. The fish, therefore, plays directly on the barb, which is consequently very liable to be broken off. I have known three of these hooks to fail at this point in one day's fishing. The state of mind of their unhappy user may easily be imagined.

Of these hooks, therefore, the O'Shaughnessy is decidedly the best for salmon-flies, and upon them the Forest flies are tied.

But a so-called modification of the Limerick hook, the invention of Mr. H. Cholmondeley Pennell, the well-known angling-author, has recently appeared in England, which I believe to be far superior to any of these. I recommend this hook with the greater confidence, since I have used Mr. Pennell's modification of the Sneck-bend for three or four years under conditions designed to thoroughly test its efficiency and strength. Gradually it superseded every other form of hook in my esteem, until last year I used no other, except upon compulsion and with reluctance.

Fig. 11. Pennell Sneck-bend Hook.

It will be noticed that the point is set in toward the shank so as to insure all the certainty of penetration which the original form of Sproat possessed—or indeed which is possible in a hook; that the point is long and conical; that the wire is but little weakened in the formation of the barb; that it is deep on the shank-side; that the wire is of sufficient thickness to prevent change of form; and that the shank is straight, thus facilitating the tying of the fly.

My attention was but recently called to the "Improved Limerick" hook. Though its name and shape might lead a casual observer to consider it really a modification of the hook from which it is named, careful consideration of the following diagram of the three sizes

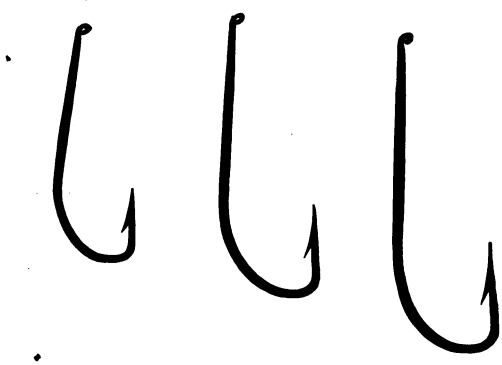

Fig. 12.

most useful to the salmon-fishermen in this country, will show that it is really nothing but the Pennell Sneck-bend hook, with the angle where the shank merges into the bend softened into an easier curve.

The weakness due to the somewhat angular bend in the old form was compensated for by increasing the thickness of metal at that place, and it answered every purpose, as far as I could see. The substitution of the curve for the angle gives even greater strength, but it is gained only at the sacrifice of the long straight shank of the Sneck form—a loss which the fly-tier will deplore.

Salmon-flies are usually provided with a small loop of twisted gut by which they are secured to the leader. This system is open to objection. When the loop has been once wet, and has become dry again, it is often found to be twisted upon itself. Thereafter it will be very difficult to make the fly swim upright and upon an even keel, instead of which it is apt to wobble through the water in a manner equally demoralizing to the fish and to the angler.

A letter, recently received from one of the highest authorities on fly-fishing in the United Kingdom, assures me that the better class of fly-fishermen throughout Great Britain have abandoned the use of all gut appendages to the fly, whether large or small. The imitation insect is built upon a naked hook, the shank-end of which terminates in a small eye, as shown in the preceding figure, into which the leader is tied.

Eyed hooks are old, and have been tried and found wanting. It is but another example of how slight a change of structure will often convert a mechanical failure into a practical success. The change in this instance consisted in giving the eye a bend upward of something more than half a right angle. The leader, if the knot is properly tied, then leads from the hook in a continuation

of the line of the shank, causing the fly to swim upright and on an even keel. All injury to the fly from drawing it through the loop terminating the leader is thus avoided, since that loop is dispensed with, while the useful life of the fly depends on the cohesion of the material of which it is composed, rather than on the integrity of the gut upon which it is tied. Some authorities claim that a fly so constructed will last five times as long as one made in the manner usual here—an important feature when the cost is considered. But however that may be, there can be no question that a fly so made will last much longer, be less likely to snap off on the back-cast, swim straighter, and that the connection between the fly and the outside world will be much more closely disguised.

Mr. Pennell has improved on this feature of the hook by turning the eye downward, as shown in the figure, instead of upward. The draft-line—or, in other words, the sureness of the hook—is certainly improved by the change. It would also seem that the gut should then lead in a line more coincident with that of the shank of the hook, with a consequent improvement in the swim of the fly.

The following diagrams and directions showing how the leader should be secured to the hook, are borrowed from Mr. Pennell himself. The term "central link" designates the body-part of the leader, as distinguished from its end-part.

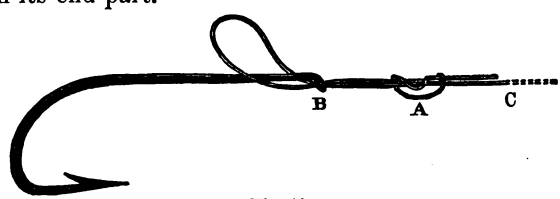

Fig. 13.

"Take the hook by the bend between the finger and thumb of the left hand, and with the eye turned downward in the position shown in the diagram; then—the gut being first thoroughly well scaked—push the end, with a couple of inches or so, down through the eye (*B*) toward the point of the hook; then pass it round over the shank of the hook, and again, from the opposite side, downward through the eye in a direction away from the hook's point (the gut-end and the central link will now be lying parallel); make the double slip-knot (*A*) round the central link (*C*), and pull the said knot itself perfectly tight; then draw the loop of gut, together with the knot (*A*), backward (toward the tail of the fly) until the knot presses tightly into and against the metal eye of the hook (*B*), where hold it firmly with the forefinger and thumb of the left hand, whilst with the right hand—and 'humoring' the gut in the process—the central link is drawn tight, thus taking in the 'slack' of the knot. When finished, cut the superfluous gut-end off close."

"[To tie a double slip-knot: Make a single slip-knot (*A*), and, before drawing it close, pass the gut-end (*B*) a *second time* round the central link (*C*), and then again through the loop (*A*), when the knot will be like (*A*) in the larger diagram. To finish, pull the end of the gut (*B*)—gradually, and at last very tightly—*straight-away:* in a line, that is, with the central link (*C*).]"

Fig. 14.

He who is accustomed to tie his own leaders, will recognize this knot as that which is generally termed in this country "the double water-knot."

I cannot but think this a very decided advance on the

methods at present in use in this country. It is adapted to all sizes of flies, from the minutest midge to the largest salmon-fly, though the greater comparative cost of the latter, and the greater durability which it insures, render it more important that it should be applied to them. By the time this book is in print, or soon thereafter, it is hoped these hooks and flies tied thereon may be had in this country. It rests, however, in great measure with the anglers themselves. Fishing-tackle dealers are conservative as a rule; and though competition will do much, more in the way of improvement and advance is to be accomplished by outside pressure. If all who approve of the foregoing, and desire to try these hooks, will but ask their respective fishing-tackle dealers for them, they will soon be on sale everywhere.

CHAPTER VI.

SALMON-FISHING—CASTING THE FLY.

THE suggestion of salmon-fishing to a trout-fisherman inexperienced therein, at once raises the doubt in his mind whether he will be able to cast efficiently with a salmon-rod without long preliminary practice; and his very first question is usually designed to relieve his mind on this point.

My answer to this question has been, that he who can cast with a single-handed trout-rod, will be able to cast equally well with a double-handed salmon-rod with little if any more special practice than would be required to pass for the first time from the use of a five-ounce to that of a nine-ounce rod.

Some of the books contain diagrams showing the path to be described in the air by the tip of the rod and other like matters, intended to instruct the beginner in the art of casting with the salmon-rod. Though accustomed to reading mechanical drawings and interpreting descriptive matter relating to them, these diagrams were to me a source of doubt and uncertainty. Exactly what was their purpose I could not determine to my own satisfaction. It was only after experience had illumined the question that I found it could have well been paraphrased thus—so handle your rod on the back-cast that the fly shall not strike the rod in its backward flight.

Perhaps the fact that the path to be described by the tip of the rod to accomplish this result must vary with the presence or absence of wind, or its direction if present, may have confused me. Only when a dead calm prevails can directions of this kind be applicable.

But however this may be, it all amounts to the very elementary principle indicated—a principle which every tyro discovers during the first twenty minutes of his

Fig. 15.

maiden effort to cast the fly. We all know that in a dead calm the rod must follow one path on the back-cast and another on the forward-cast; that if the wind is quartering, or from either side, the rod should travel backward and forward in the same substantially perpendicular plane; and that when the wind is gusty and

baffling, the best of us are sometimes caught napping, to our great mortification and disgust.

I have alluded to this matter thus at length, lest the incipient salmon-fisherman be deluded, as I was, by the very simplicity of the real explanation into seeking a hidden meaning which has no existence.

There is, however, one difference in casting with a salmon-rod, that he whose experience has been limited to a single-handed rod must by no means overlook.

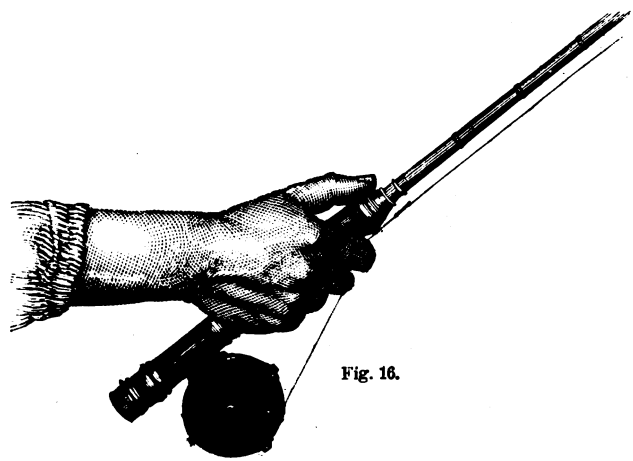

Fig. 16.

When casting with a single-handed rod, the practical centre of motion lies within the hand which holds the rod. When the upper part of the rod is thrown behind the angler on the back-cast, that portion of the handle which is below the hand moves toward the front, as shown in Fig. 15.

When the forward-cast is made, that portion of the handle moves toward the rear, as shown in Fig. 16. The casting-hand is in effect a pivot upon which the rod oscillates.

Now let us assume that we have before us an expert in the use of the single-handed rod, essaying to cast with a double-handed rod for the first time. Since example is better than precept, a close observation and analysis of his procedure cannot fail to be instructive.

Having always been accustomed to manipulate his rod with the hand above the reel, he naturally relies mainly on that hand to govern the rod; and as naturally, and for the same reason, endeavors to make that hand the centre of motion, and to compel the lower hand to comform thereto. In other words, he endeavors to reproduce the motion of the single-handed rod, moving that portion of the butt below his upper hand to the front when the upper part of the rod is thrown behind him for the back-cast; and reversing the motion of these parts upon the forward-cast, his upper hand being the centre of motion. He is in trouble at once. If he holds the rod approximately opposite the middle of his body, as is inevitable since both hands are employed, he will hardly have begun his forward-cast before that portion of the rod below his upper hand—reversing as it does the motion of the upper part of the rod—encounters his stomach, and brings the cast to an untimely and disagreeable end.

A few experiences of this kind are a full dose for a grown man. Some modification is imperative. He next endeavors to cast by holding the rod well off to one side, so that the butt may swing clear. If standing, this is in measure successful, until excessive fatigue from the un-

natural and constrained position indicates that something must be wrong about it too. If sitting, he finds not even this faint shadow of encouragement. The butt of the rod is as constantly in the way as is a sword to him who for the first time tries to dance with one by his side—and moreover it kicks like a mule.

The path may be longer or shorter, and it may be more or less thorny, but it leads to this at last. He now grasps the rod with the lower hand at the extreme end of the butt. He makes this the centre of motion instead of his upper hand, and moves the latter hand to conform thereto. The rod at once abandons its vicious demeanor, and ceases to kick, since the kicking part is held still; and lo! the problem is solved.

If he who is accustomed to flyfishing for trout with a single-handed rod will but bear this principle in mind, he may look forward with confidence to handling a salmon-rod at his first effort, with little or no embarrassment as far as casting is concerned.

Nor is this all of benefit to be had from this method of handling the rod. Upon no one point in the use of the single-handed rod is there a more complete concord of opinion, than that both hands should be educated to handle the rod with equal facility and skill. Every instructor, whether in print, at home, or in the field, strives to impress this upon the beginner. The more deficient the instructor himself may be in this respect through defective early training, the greater his appreciation of the accomplishment, and the more urgent his recommendation.

The ability to handle a salmon-rod with either hand above the reel, if not the exact counterpart of this, dif-

fers only in that it is of even greater importance. If the beginner will but grasp the rod at its extreme lower end, and make that end the pivot upon which the rod swings,—bring his upper hand as close to the reel as the length of the rod and his physical strength will conveniently permit, that the amplitude of motion of that hand may be reduced to a minimum,—and then, treating the lower hand almost as if it were a mere socket, compel the upper hand to conform to the motion of the rod—he will find little embarrassment from this cause at the outset, and none at all after a very little practice. He will then not only be able to cast over either shoulder with equal indifference and efficiency, but he will be able to substitute the position of one hand for that of the other whenever the approach of fatigue suggests the change.

Perhaps no mental constitution is more rare than that which enables the old and experienced to remember their youth or their novitiate, and to so recall the obstacles which then beset their path as to place them before the beginner, and show him how they may be avoided. Self-evident as it must appear upon the least consideration that the foregoing principle lies at the very root of facility in the use of a salmon-rod, still neither from any of the many books which I consulted, nor from any of my expert friends, did I receive the slightest intimation of its existence. To author and angler alike the day when they first stood rod in hand upon the bank of a salmon-river, and their early struggles at the foot of the rugged hill of knowledge, had become a memory too vague and shadowy to be recalled. The higher phases of the art, particularly in reference to those points as to which the most skilled differ in theory and practice, they could dis-

cuss with ability and precision. But the needs of the beginner had been forgotten; and he, himself ignorant of what was to him unknown, could not aid their memory by suggestive inquiry.

To the recollection of the mental travail and the many thumps by which this simple lesson was hammered into me—a lesson which the slightest suggestion would have taught equally well—to this and to the like, as well as to the desire to popularize this king of all sports among the hosts of my countrymen whose ideal of recreation is the gentle pursuit of the angler, this book is due.

If he who can already cast a fly with a single-handed rod will but bear in mind this one simple principle, no difficulty in casting equally well with a salmon-rod will be encountered, and he can anticipate sport with confidence, as far as casting properly is concerned, even though he take a salmon-rod in his hands for the first time on the very river-bank.

To him who has the art of casting the fly still to acquire, let him study the principles and follow the system of practice set forth in Chapter IX. of "Fly-Rods and Fly-Tackle" for two or three weeks before his trip,—longer if possible,—using, of course, a salmon-rod and line. Though he may not then be an expert, still he will be able to cast respectably—at any rate so that inability to present his fly will cause no serious embarrassment.

Though overhead-casting is the usual, and, generally speaking, the best method, still circumstances not infrequently arise under which it is desirable, and sometimes absolutely necessary, to dispense with the "back-cast." The overhead-cast requires an arena behind even

less obstructed than that in front of the angler. When the rivers first ploughed their way to the sea, the convenience of the coming angler was not at all times duly considered. Not unfrequently some rocky cliff or high overgrown bank so obstructs the back-cast, as to render it of possible advantage only to the tackle-dealer. Some method, then, of casting the fly which will dispense with the back-cast is certainly desirable.

Those who in their youth have not amused themselves by throwing an apple from the end of a switch, can easily imagine the process. If, either from memory or a "scientific use of the imagination," a picture be drawn of what would be done were it desired to thus project the missile at an angle of seventy-five degrees from the horizon, we have it. By duplicating this motion with a salmon rod, the desired result can be accomplished.

With the aid of a favorable wind I have seen a very long line cast in this way; but against the wind it is efficient in the hands of but few, and that with but a short line. It is somewhat splashy, and wanting in that finished neatness a trout-fisherman loves to see; but the splashing occurs in water already fished over, and it certainly will take fish. When the wind howls down stream, and casting in the ordinary manner becomes a nuisance from the effect of the gale on the back-fly, then, and when obstacles prevent the ordinary back-cast, the angler will surely remember all the attention he has given to this method of casting with great satisfaction.

Perhaps more detail of direction may be of service. Let us assume the fly is on the water, and that the time has come to retrieve it for the back-cast. Permitting the fly to look out for itself and without taking it off the

water, the rod is thrown into an almost but not quite horizontal position, the butt pointing to the front and in the direction in which the cast is to be delivered, while the tip of the rod projects to the rear. We have thus drawn the line and fly over the water toward us, and have the tip of the rod and about the length of the rod of line behind us. So far we have copied the motions of the boy endeavoring to cast his apple from his switch to the greatest possible distance. To so project the apple, it must not be discharged horizontally, but well toward the sky. We continue to follow his example.

We switch the rod upward with some force. Though careful to see that the impetus ceases before the rod is quite perpendicular, we nevertheless continue the motion and ease the rod down until it is nearly horizontal, with the tip pointing to the front and toward the place at which we wish the fly to be delivered. Perhaps the following diagram will make this plainer, in which

A B represents the rod before the switch;

A C, its position when the impetus is to cease;

A E, its position when the cast ends; and *D* the place at which we aim. The arrow points at the salmon for whose entertainment the cast is made.

By thus acting as though we were trying to hit the moon, that portion of the line which was behind us is thrown into a loop; and, if the impetus ceases at the proper moment, this loop travels down the line, lifting the fly from the water and projecting it forward. The loop must be directed to one side of the line which remains on the water, and the leeward side must be chosen if the wind is not dead fair with the cast. Otherwise the sides of the loop will be blown against one another,

and the impetus which should have propelled the fly will be consumed in overcoming the friction so caused—in which case the cast will be a failure.

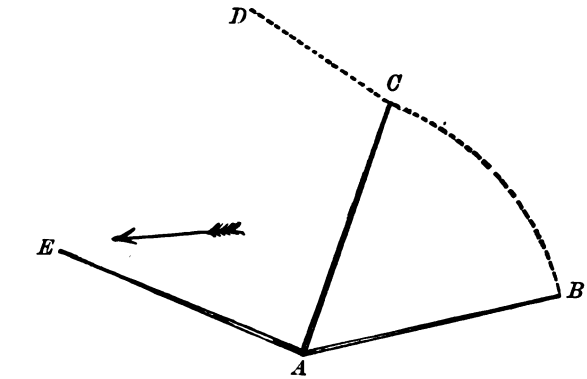

FIG. 17.

Of the many names for this cast in vogue, the "Switch-cast" seems to be preferable, since it is most descriptive.

CATCHING THE FISH.

Having in some degree mastered the art of casting the salmon-fly, the question "what next" naturally presents itself.

That "next" is so to handle the fly, that it shall excite the acquisitiveness of the fish to the uttermost without arousing the counter-sentiment of suspicion.

To this end the current, which will almost invariably be present where the fly is cast, will lend no trifling aid. Not only does it buoy up the line and fly and thus lessen the labor of the rod on the back-cast, and for something

the same reason facilitate the switch-cast as well, but it coöperates with the angler in imparting an attractive motion to the fly, while the wrinkled surface interposes a curtain opaque to fish-vision between the angler and the sharp eyes of the salmon.

Both theory and experiment were invoked in "Fly-Rods and Fly-Tackle," to show under what conditions and to what extent fish can discern objects above the water.

It will be sufficient here merely to recapitulate these results.

1st. Objects situate above the surface of the water are only visible to the fish when that surface is smooth.

2d. They are only so visible within a circular area, the centre of which lies directly over the fish, and the diameter of which is to the depth of water above the fish as 20 is to 13.

3d. Every object ten inches above the water for every ten feet from the centre of this circle, is visible within it by refraction.

4th. When the surface of the water is disturbed the transparent area is blotted out, and the entire surface becomes opaque to fish-vision.

We all know enough about fish to know that we know comparatively little about them. That they all breathe by taking water in at the mouth and discharging it through their gills, and that they all wag their tails when they swim, we know. But of the causes which induce the many peculiarities of conduct which continually surprise and confound the angler, and which we are apt self-sufficiently to characterize as mere caprice, we know hardly more than did the builders of the Great Pyramid

when they, their daily task completed, cast their baited hooks into the yellow waters of the Nile.

Whether it be due to the "survival of the fittest," or whether fish can and do profit by the lessons of experience, no one who has cast his fly over the trout of the wilderness, and of much-fished streams within the confines of civilization, can have failed to notice the marked difference in their susceptibility to temptation. The one will take anything that has motion, though thrown to it as one would throw a bone to a dog. The other requires just such a thing to be tendered in just such a way, or, no matter how abundant, they will laugh the angler and his wiles to scorn.

It cannot be because the ordinary perils of life, man excepted, are less in the wilderness that their temerity is less, since natural enemies are there more abundant. Man and his works, or conditions arising therefrom, must be the cause.

However this may be, whether it be due to greater natural courage in the salmon, or whether it be due to the fact that by its long sojourn in the sea it is cut off from the school of experience, it seems certain that salmon regard the angler and his allurements with far less distrust, and that they may be taken with a considerably lower display of skill, than the trout of our much-fished streams.

The weight of authority would compel the belief that salmon eat nothing after they enter fresh water, were it not that they are taken with shrimp, minnow, and worm-bait in some rivers where that style of fishing is in vogue. Overawed by the first consideration, and ignorant of, or ignoring the other, many have puzzled their own heads

and those of their neighbors over the question, Why does the salmon take the fly?

If we are a little more modest in our generalization, and say that salmon feed seldom and sparingly after entering fresh water, it seems to me we will have a theory more easily reconciled with the admitted facts, and one in every way quite as serviceable. I have heard that that species of man known as a hostler chews a straw, and that the card-sharper masticates a toothpick—both with no ulterior end in view. But they are no work from nature's hand. When animals in a state of nature seize an object, they do so, as far as I am advised, for a definite purpose. Excluding attack upon or defence from an enemy, it is either for food, or to transport the object to another place where it may be of use to them. No intimation or suggestion has yet reached me that salmon apply artificial flies, or anything resembling them, to any purpose whatever. It seems much simpler and far less of a tax on our credulity, to believe that they take them purely and simply as things edible. That of the many salmon which see the angler's fly during the course of a day's fishing, but comparatively very few indeed can be induced to make the slightest effort to take it, seems to me consistent with and confirmatory of the position we have assumed; and that the theory that salmon do feed in fresh water, though sparingly, and that when they take the fly they take it as and for food, have at least the weight of probability strongly in their favor.

During this digression let us suppose the angler to have jointed his rod and prepared his cast, and that he stands upon the river's bank ready for action.

Where shall he cast? The fish are not impartially disseminated through the water as though scattered from a pepper-pot. In some localities they abound, in some they are scarce, while others they avoid altogether. This all-important question fortunately admits of a very easy answer. *Ask the gaffer.*

Unless personally acquainted with the individualities of the stream he is about to fish, even the most experienced is guided in great measure by reference to the local knowledge of this functionary. Though an acquaintance with the haunts of salmon elsewhere will aid to locate them in an unfamiliar river, still it makes at best but a *prima-facie* case. Places which seem to furnish every requisite for a salmon elysium, are shunned for others which apparently offer no special inducement.

Nothing about salmon-fishing will probably astonish the experienced trout-fisherman, if unprepared, more than his first introduction to a "salmon-pool." I say probably, since it may possibly resemble what he has been accustomed to call a pool. In his mind the word "pool" calls up a vision of a deep dark basin which looks as though it might have its bottom almost anywhere this side of China. A fall or heavy rapid thunders into its upper end, where bubbles of foam are swept hither and thither by a maze of eddies bordering a current which projects, tongue-like, toward, and dies a quiet death in the centre of the pool. Elsewhere the surface is still and oily, reflecting every rock, tree, and fern upon its margin with mirror-like fidelity. A dim religious light—the light of the cloister—broods over the scene. The air is cool and damp, and laden with the fragrance of the forest. It is the abode of peace—so distant from, so opposed to all that makes up

the daily struggle for life, that it seems part of another and distant world. When the past rises before him, what angler does not recall many such scenes, and the many hours of solemn happiness which have glided by among them. They are the chosen home of the very genius of our art.

With such a picture in my mind, and with such anticipations, I approached my first salmon-pool. I looked upon it with almost a shock of disappointed surprise. The water was clear, from three to six feet deep, and moving with a current of some three miles an hour, which covered the surface with wrinkles an inch or two high. The bottom was covered with stones, from the size of a nut to a foot or two in diameter, swept clean by the current. Below, quite a rapid could be seen; while above, the water deepened and became more sluggish. A clay bank about eight feet high bounded one side, while on the other the water deepened and spread to the opposite shore, at least a quarter of a mile distant. It was a most humdrum-looking affair, relieved from absolute insipidity only by the beauty of the valley and of its distant margin of picturesque hills.

Though salmon, when waiting to ascend some heavy fall or rapid, do lie in places which a trout-fisherman would call a pool, and though they may be taken there with a fly, still the great majority of salmon-pools correspond in their general features to that described. They are in reality more or less gentle rapids, with a clean and gravelly bottom partially covered with loose stones, boulders, and detached rocks. Deeper and stiller water may be immediately above, below, or on either side; or bottoms more gravelly, stony, or rocky, and with more

or less current, may be close at hand. For some reasons known only to themselves, and apparently beyond the skill of man to divine, they select and haunt the one, while they utterly ignore the other, though seemingly in every way preferable. I have conversed with many salmon-fishermen in reference to this peculiarity. But I have invariably found that those whose opinion was entitled to most weight, were the most reluctant to assign a cause.

But the angler has been dreaming salmon-fishing perhaps for months, and he is impatient to begin. He casts his eye over the current and its surroundings, as a general surveys the field of an anticipated battle. He notes every obstruction in or near the water which may become a factor in the struggle should he fasten a fish, and as far as possible decides in anticipation what he will do in every imaginable emergency.

He then launches his fly in a direction at a right angle to the current, and guides it to the surface of the water as lightly and with as straight a line as his skill will permit. When the cast is complete his rod will point across the current. Retaining the rod in that position, its tip still pointing in the same direction, he causes that part of his rod to vibrate up and down in a perpendicular plane through an amplitude of about one foot, and with a rapidity of vibration about double that of his pulse. When the line where it enters the water appears to gently slap its surface at every downward vibration of the tip of the rod, the motion is correct.

The fly is now acted on by three forces: first, the current, tending to sweep it down stream; second, the re-

straining power of the line, tending to hold it back; and third, the vibratory motion of the tip of the rod. The result is that the fly describes an arc of a circle of which the tip of the rod is the centre and the line the radius, and that it travels this path by a succession of impulses and halts, timed by the rate of vibration of the tip of the rod. When the fly moves, its motion draws the wings and hackle together; when it halts, they expand. Thus the parts mentioned seem to open and close something like an umbrella, and a very lifelike and attractive appearance is given to the fly.

This is the usual, and perhaps the most effective method of displaying a salmon-fly. Some, however, allow the current to swing the fly steadily through its orbit, omitting altogether to vibrate the tip, while others impart a rapid quiver to the rod, both of which methods are at times successful. Indeed, when a particular fish has been located upon the capture of which the angler has set his heart, all these methods may be tried in succession with profit. "If one thing don't work, try another," is the angler's golden rule. The order in which they are enumerated suggests my opinion of the relative merit of these different systems.

When the current has swept the fly until the line begins to approach a right-angle with the rod, the tip may be swung down stream and in toward the bank. The centre of motion is thus changed, and the fly follows a new course until the time for a new cast arrives. But perhaps a distinct enunciation of the object in view will not only be more easily remembered than specific directions, but will be also much more elastic and adaptable to local circumstances and conditions than any hard-and-fast rules.

Now the salmon may lie at one side or the other, or in the middle, or in any intermediate part of the pool. Therefore that fly which begins its career on the farther side of the pool and swings completely across it to the nearer side, must pass before the noses of more salmon, and must be more likely to encounter one having a taste for fly, than if it traversed a more restricted path. The purpose, then, is to display the fly over as much of the surface of the pool as is conveniently possible, and to make it swim across the current, instead of up or down stream, in so doing. The following diagram will illustrate this.

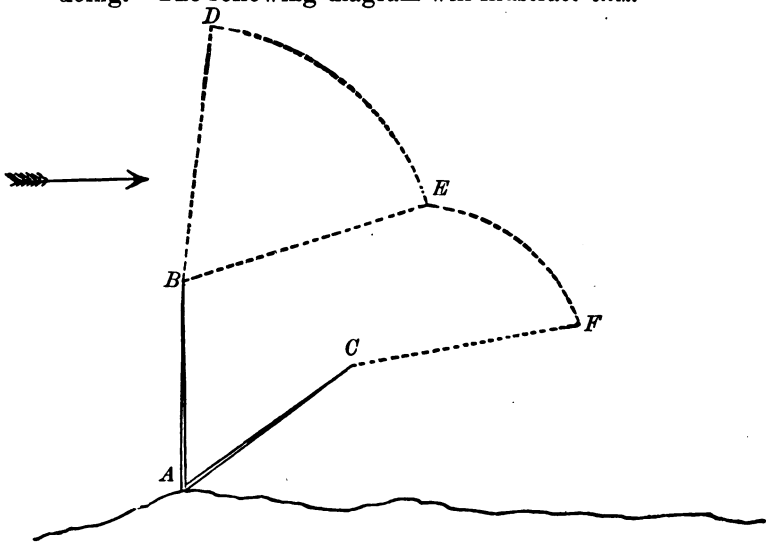

Fig. 18.

The arrow shows the direction of the current.

A represents the angler; *A B*, the first position of the

rod; and *D*, where the fly lights upon the water. The rod is retained in the position *A B* until the fly has swung through the path *D E*. The rod is then shifted to the position *A C*, and retained there until the fly has swung to *F*, when a third similar change may be made if salmon may be expected still nearer the bank. During all this time the tip of the rod has been vibrating as hereinbefore described, if the angler practises that method of displaying his fly.

That the fly should attract the attention of the fish before the leader, and more especially before the line, is obvious.

If the current is more rapid nearer the angler than it is where the fly lights, the line will be swept down stream faster than the fly. A belly is thus thrown in the line which will travel first, while the fly will come tagging along behind—clearly a very undesirable condition of affairs. The character of the current in this respect should not escape the attention of the angler. If it is unequal, to show the fly in an attractive manner to a more limited yet appreciative number of spectators, is far better than to pass it before the nose of every fish in the river, if it be only to excite their derision and contempt for the transparency of the fraud.

Two courses are open to the angler under such circumstances, alike in that they embody the same principle, though differing as to the means employed. The object is to handicap the line by giving the fly an earlier start in the race. This may be done by casting more obliquely down stream, or by switching the tip of the rod up stream the moment the fly alights on the water, and thus throwing the belly of the line up the current. In either

case the fly is so far ahead of the line at the beginning of its career, that it cannot be overtaken and passed by the line.

Having completed one fruitless cast, the angler throws his fly behind him, and while it is on its backward flight he takes a step or two forward, and then repeats the effort. It is important that the advance be made either at the time indicated or before the fly is taken from the water, rather than after the cast is delivered. In the first case, his advance aids in straightening out the line well behind; in the second, he but loses a little time in waiting for the current to take up the slack line before he begins his back-cast, and this in barren water; but in the third case, his fly will lie impotent and useless, perhaps right in the best of the water, until the current has straightened the line and command over the fly is regained.

After a fish is fastened two methods are open to the angler. In one, fish is the main object; in the other, fun. Personally I prefer the latter method—at all events after having taken the first edge off my appetite by a day or two of success.

In the first case the angler, though always, except in an actual crisis, handling the fish as if lightly hooked, keeps just as close to it as he can, and gives it no inch of line that a vigorous use of his legs will enable him to retain. He also endeavors to keep below it, for a salmon is like a hog—pull it in one direction and it usually tries to go in the other, and up stream for a fish is like up hill for a horse.

In the other case, the angler lets the fish run as it sees fit, and the farther it goes within the scope of his line,

and the more it jumps and "cavorts," the better he likes it. When it approaches an obstruction of course he opposes it as best he may. When some more than usually persistent effort admonishes him that his line has another end than that attached to the leader, he puts his best foot forward. Then he flies over stock and stone, in the water and out, passing his rod to his gaffer where tooth and nail may be required to surmount some unusual difficulty, and resuming it when it is overcome, half regretful that he was so indulgent, and wholly determined to atone for it if any effort short of a broken neck will do it.

I know of no more interesting study than the face of an angler under such circumstances. If a six-story building were clattering about his ears he could not show more earnestness of purpose, while he forces his way through brush, and skips over logs and rocks, as though the market-price of surgeons-plaster and arnica was not affected by demand and supply. The most apathetic will then display a degree of activity little short of phenomenal. He is animated by the spirit of the beaver of the story—he does not wish to climb a tree, nature has not designed him for that purpose, and he cannot do it; but the boy is on one side and the dog is on the other, so, since no other course is open, up he goes.

Of course the character of the field of battle determines to what extent this method may be followed. Though there is great excitement, and consequently great fun, in seeing how near the ragged edge of defeat can be approached without toppling over its brink, and though a salmon of twenty pounds, saved after a contest in which the scales of fortune have been throughout in constant oscillation, is more esteemed than one of twenty-five

which has been prematurely scooped from the water by a lucky chance and the skill of the gaffer, still it is somewhat questionable whether we who follow this method are justly entitled to plume ourselves as being so much more sportsmanlike than those who do not. We take more chances, it is true, and we lose more fish; but we do the first only when we think we see a clear way out of the difficulty, and the latter is quite involuntary. Really the most æsthetic in practice, if not in theory, takes precious good care to keep the probabilities of success decidedly in his favor.

Thus far our friend has fished from the bank. He will hereafter use a canoe; and since the greater part of the reader's fishing will probably be so done, and since much of what follows will be equally applicable to fishing from the bank, and where it is not that fact will be quite obvious, we will conclude in that way.

The angler seats himself near the middle of the canoe upon a box or other improvised seat. It will grow no softer with use, and he will by no means regret it if he has provided some form of cushion, though it be but an old flour-bag to be stuffed with moss or hay. Both ends of the canoe are alike in form, and either may and will be used as the bow as convenience may require. Still, since a name is necessary, we will call the end he faces the stern. His gaffer occupies that end, his paddle, gaff, and setting-pole within convenient reach. He is the captain, and with him alone will the angler habitually communicate and consult, and to him pay the hire of men and boat. The bow is the station of one usually the junior in years and experience of the gaffer, to whom he

looks for his orders, and with whom alone he will converse, unless directly addressed.

The canoe is pushed from the bank. The gaffer consults his employer as to the pools which are disengaged, and advises him, in the absence of positive orders, which one to try first.

When the head of the pool is reached the gaffer directs his subordinate to anchor; which being done as quietly as possible, he seats himself on the bottom of the canoe so as to be out of the angler's way, facing its stern. A few moments should be suffered to elapse for any alarm occasioned by the approach of the canoe to subside—an interval very appropriate to freshly charging and lighting the pipe of him that smokes.

Studying the current as before, and being guided by the same general principles, we will assume that the current permits the first cast to be delivered almost at a right angle to the canoe.

In the following diagram the arrow shows the direction of the current; *A* is the angler, *B* the gaffer, and *C* the subordinate. *A D* is the position of the rod at the completion of the first cast, and *E* where the fly then lights. The rod is retained in that position, with the tip a little, and but a little, elevated above the horizontal, until the current has swept the fly to *F*, during which the tip is vibrated as before if the angler adopts that method of displaying his fly.

When the fly reaches *F* the rod is shifted to the position *A G*, and vibrated until the fly reaches *H*. The fly has thus traversed the pool from *E* to *H*, and the first cast is complete. Since the casting was toward the left, the rod was thrown behind over the right shoulder,

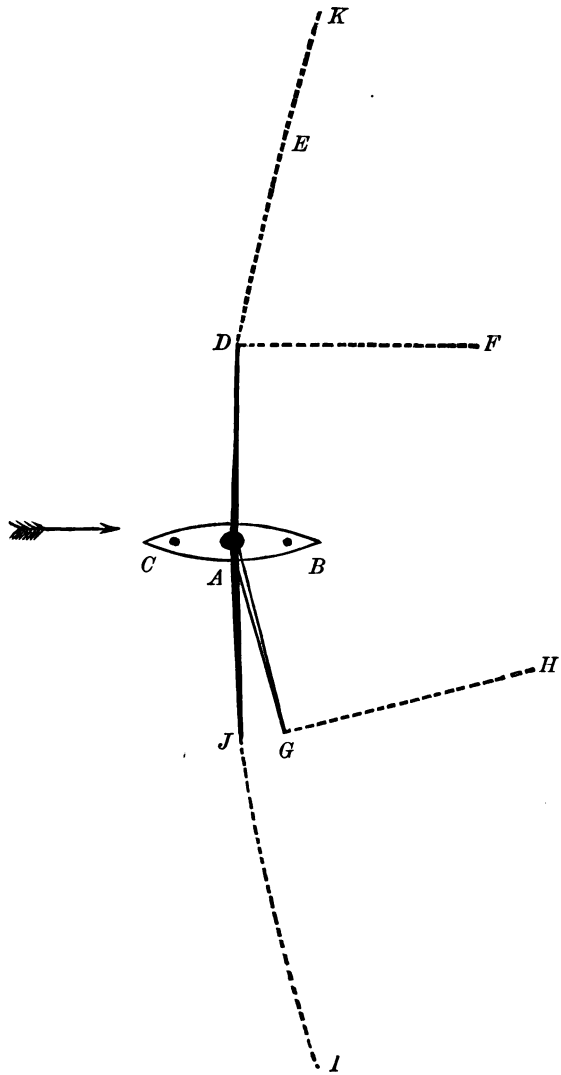

Fig. 19.

the right hand was above the reel, and the left was upon the butt. He now changes hands, grasping the butt with the right hand, the left above the reel, and, throwing his rod over the left shoulder for the back-cast, delivers his fly at *I*, guides it around to the vicinity of *F*, in the manner already described. The second cast is now complete, and the fly has swept the pool from *E* to *I*. Though this, if well done, will usually be sufficient to demonstrate the presence or absence of a fish inclined

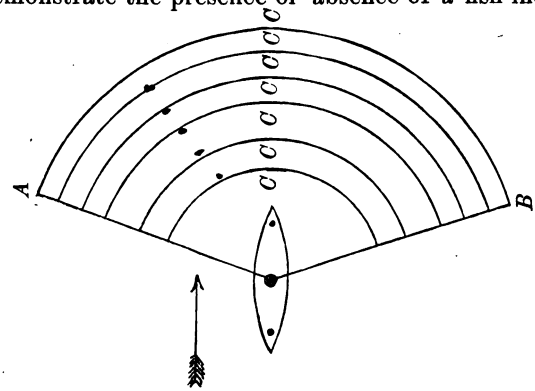

Fig. 20.

to rise, still it may be repeated once. Beyond this it is seldom worth while to go, unless some resting-place especially favored by the fish is under the cast.

The hands are now shifted as before, the line lengthened six or eight feet, and the fly delivered at *K*, and the first process is repeated in all things until the fly has been displayed from *K* to a point beyond *I*; and this is repeated again and again, in default of a rise, until all the line is out that the angler can conveniently swing.

The fly will then have traversed the pool from a line *A* abreast the canoe on one side (see preceding figure), to a line *B* abreast of the canoe on the other side, following a succession of circular arcs *C* in so doing, of which the angler is the centre, and the respective radii of which are the length of the rod plus the quantity of line in use at the time. Thus every fish in that quite extended area has had a chance at the fly and can complain of no partiality on the part of the angler, which is the end in view.

Having thus described with his fly the most distant arc conveniently possible,* he begins to reel in. Instantly

* The longest cast of record with a salmon-rod in this country is 131 feet, by Mr. H.W. Hawes, at Central Park, October, 1884, with an eighteen-foot split-bamboo rod. In England, Major J. P. Traherne is credited with a cast of 136 feet. Mr. Hawes stood about 30 feet from the bank, upon a platform raised one foot above the water, and cast parallel with the shore. He was credited only with the actual distance which intervened between the edge of the platform and where his fly struck the water, measured upon a graduated rope stretched perfectly straight, close beside which he cast. A very few inches would mark the limit of possible error. Since we are informed that the distance credited to Major Traherne was determined, not by the distance he actually covered, but by the distance which it was assumed that he had covered determined by straightening his line and measuring that, I am decidedly inclined to regard Mr. Hawes' cast as the longer. Of all the fly-casting I have ever seen, I consider this performance of Mr. Hawes as the most remarkable. Not so much does the enormous length of the cast induce this opinion, as the manner in which it was done, and the physique of the man who did it. Mr. Hawes was at that time a man of very slender build, and with a wrist as slight as that of a woman. Rod and line worked in his hands with the precision of a faultless machine. Even when at the extreme of his cast, his back-fly was some 25 feet above the water. Taking all the circumstances into consideration, it was certainly a most remarkable triumph of skill over matter.

the gaffer gives the order, the anchor is raised clear of the bottom, the canoe drops down with the current until the gaffer thinks the first cast made from the new position will just match on to the last cast from the other, when he orders the anchor down, and the fishing is resumed in the same manner. Thus by alternately anchoring and dropping the canoe down with the current, the pool is fished from end to end—a distance which may possibly be a hundred yards or even more.

Let us assume, as is often the case, that no salmon has been raised during this excursion. But many trout have assuredly been taken. Though this will give little pleasure, since trout in a salmon-stream are like chubs in a trout-stream—mere vermin—still it may and should be made of great value to the trout-fisherman. The greater his experience and past success in trout-fishing with the fly, the more need has he of the lesson which may then be learned.

The moment the skilled trout-fisherman sees a disturbance in the water near his fly, he retracts it—he "strikes" as instinctively and with as little conscious special volition as when he breathes.

This habit, however excellent in trout-fishing, is a fatal error in salmon-fishing, and must be overcome. When a salmon so rises as to disturb the surface of the water, it manifests its presence long before it has touched the fly. If the angler then strikes, in the trout-fisher's sense of the term, he simply snatches the fly from the astonished fish, which will probably return to its lair in a state of disgust which no subsequent blandishment will remove.

Possibly some of the more wicked of us have in our boyhood placed an attractive package in the way of

passers-by, upon which we still maintained a lien through a string leading to our place of concealment. The wayfarer eyes the lucky find and stoops to make it his, when it vanishes under his fingers in obedience to a timely jerk upon the cord. Any one who has been once so fooled will appreciate the feelings of the salmon when treated in the same manner, and those who have not can easily imagine them. The cases are exactly parallel.

The beginner, then, should vow in the most solemn manner that he will not strike, and avail himself of every opportunity which the trout may offer to school himself into making his resolution good. It is no easy matter to overcome a habit which has become instinctive. He will find that even with the promise warm upon his lips he will break it; and that while blaming himself and renewing his assurances, he will repeat the offence, until he is utterly ashamed of and disgusted with himself. But perseverance conquers all things, this habit included.

There is a wide divergence of opinion among salmon-experts as to whether the fish should be struck or not, some advocating it, while others equally skilled protest against it as pernicious. But it seems to me this difference is apparent rather than real. Certainly no one would counsel the demonstration of the trout-fisherman—that is, a sudden retraction of the fly—at the first indication of the near presence of the fish. I believe just as few would oppose an effort to imbed the hook after it was actually in the salmon's mouth. The advocates of the first method seem to address their attention to the time when the salmon actually has the fly in his mouth, and say "Strike by all means." The others appear to

consider the period before the fly has been grasped, and say "To strike is ruin." But if pressed, both will probably agree—the one that they by no means wish to be understood to counsel the strike before the fish has taken the fly, and the others that a moderate demonstration, if postponed till then, can do no harm.

After collating and comparing what I have read, what I have heard, and what I have done, it seems to me that the beginner who is guided by the following precepts cannot go far wrong.

That a salmon-rod is moved in fishing very much less than a trout-rod, which is in almost constant motion, that the casts are much less frequent, and that it is held in a much more horizontal position when the fly is working, have probably been already remarked. Now if it be resolved that no matter what a salmon may do, even though he stand on his nose and direct his tail to every point of the compass in succession—that under no circumstances will the angler respond in any way until the tip of the rod is pulled down or line is drawn from the reel; and that then he will limit himself merely to raising the rod—or rather act as though that was the intention, when the result will be that the rod will bend and double up—he will not only have done all in the way of striking which is either necessary or advisable, but he will have followed the actual practice of the majority of those who advocate as well as of those who deprecate the strike.

When the tip of the rod is pulled downward, or when line is drawn from the reel, since both are inanimate, some extrinsic force must be the cause. That cause must be the salmon; and since it has no other prehensile organ, the fly must then be in its mouth. If we then bend the

rod, which is necessarily the result of an effort on our part to lift it since the salmon holds the end of the tip down, its action as what a mechanic might term an automatic pressure-regulator comes in play. This is one of the most valuable functions of the fly-rod; and, if it has a good even bend, it is almost as perfect an instrument within its sphere as is the human hand in its wider range of usefulness. If it has not been done before, every effort to release the fly after the bend has been given to the rod will usually be futile. If the point of the hook is already in contact with the tissue, the elasticity of the rod holds it there; while if not, it will probably find a hold on its way out of the fish's mouth.

Here we find another reason for the course already advised in selecting a rod—that the rod be actually bent in the shop, and that a true curve be insisted on. Not only in casting the fly is such a rod superior to one defective in this particular, but also in the most important function of bridging over by its elasticity the intervals when the angler has, through some unexpected movement of the fish, for the moment lost command of his line. It is only after a fish has altered its course that the angler can detect the motion, and were the rod stiff the line would be slack until the angler perceived the change and could meet it by resorting to his reel. But though the angler cannot, the rod can detect the manœuvre at its very inception, and by its elasticity neutralize the danger and give the angler time to checkmate it.

A rod which bends only at the tip can pick up but a very limited quantity of slack line; while one which bends locally instead of uniformly has but the elasticity of the bending portion available for the emergency, in-

stead of the elasticity of the entire rod. It is clear, therefore, that that rod which shows a true curve throughout its length must be the most efficient in this important respect.

Salmon and trout differ widely in their methods of taking the artificial fly. The trout dashes at the fly, seizes it, detects the fraud, and ejects it, all in an instant. The time when its presence is manifest and the time when it has the fly in its mouth, are substantially synchronous. The salmon usually attacks with much more deliberation. It rises above the fly, making the water boil in the act, before touching it. After the fly has been taken, though the flavor may not be all that has been anticipated, still it thinks there is time enough to pass on that after it has returned with the fly to its lair. Neither in taking the fly, nor in ejecting it, does it exhibit the prompt resolution of the trout, though after that there is little lack of enterprise to complain of. Since then the preliminary gymnastics of the salmon may be so easily mistaken for the subsequent stage of its proceedings when it has actually seized the fly, and since a little procrastination on the part of the angler does no harm, error, if any, should be on the side of the latter. If he strikes at the rise as he would with a trout, he can say good-by to that fish, for he will see it no more; while if he does absolutely nothing whatever, the salmon will hook itself, because of its manner of taking the fly, more than half the time.

I have dwelt on this point at sufficient length, I trust, to impress its importance upon the beginner. The greater his skill and experience as a trout-fisherman, the more certain he is to err in this respect if left to his own de-

vices. In all else his previous schooling will be invaluable, but in this matter the difference is radical. *It is an absolute condition-precedent to success.*

There is another caution to be borne in mind. *Keep the hands off the line at all times when the fly is upon the water.* With a long line and a weak click, it may be necessary to hold the line when picking the fly off the water for the back-cast. But the moment the fly touches the water again, the line should be free to run without the slightest check. It must be borne in mind that in the method of fishing herein described, and believed to be the most seductive, the rod is held so nearly horizontal that at times the line makes but a small angle with it. If a salmon then takes the fly, and the line is held so that it cannot render, a sharp heavy jerk is given against an almost rigid resistance. The fly will then be taken from the leader as you would pick a berry from a bush—a state of affairs in which it is blessed neither to give nor to receive. If the tip of the rod is habitually well elevated so that the line leads from it at an approximation to a right angle, the practice of holding the line against the handle is not so reprehensible. The elasticity of the rod will then so soften the asperity of the jerk that it may be withstood. But even then I cannot see that it serves any useful purpose, while, should the salmon make a sudden run before the line is released, disaster is certain.

In salmon-fishing the fly is worked below rather than on the surface. It may be taken either with no apparent disturbance of the water, or in the middle of a boil, as

though a volcano was about to burst forth; or the salmon may roll like a porpoise, throwing itself more or less out of water, seizing the fly as it turns, and bearing it downward with it. I shall never forget one which rose as though propelled from a gun, took my fly *en route*, and soared through the air like an acrobat with it in its mouth. Appearances are often deceitful, but at the moment it seemed to my astonished eyes about ten feet long, and as though it was just from a polishing-wheel.

Any one of these demonstrations, except the latter, may occur without the fly being touched. Though it is then usual to say that the salmon has missed the fly, it seems to me a misuse of the term. I have too profound a respect for the physical ability of the salmon to believe that an earnest endeavor on its part to take the fly is ever attended with failure, unless it be in very heavy water. When the fly is not taken, it seems to me quite safe to consider it a case of change of purpose rather than an abortive effort, and to act accordingly. Then work the fly in the spot where the rise occurred, drawing it up stream about a foot, and allowing the current to set it back, and this for about ten or twelve seconds. This will sometimes act like a red rag on a bull, and tantalize the fish into fresh and decisive action. But the probability is that something is wrong about the fly, or that a sight of the angler or his rod has done the mischief. Do not then cast at it again, or reel in the line, but draw it through the rings, allowing the slack to fall on the bottom of the canoe, until the fly can be reached. Thus the exact range of the fish will be preserved, which would have become a matter of guesswork had the line been taken in by the reel in the usual manner. Change the

fly to a smaller one of the same variety, allow three minutes by the watch to elapse if the fish is small, and five if it is large, and then have at him again.

Do not cast at the fish, but off to one side so that the current will swing the fly over it as before. Indeed, unless the angler is really a first-rate caster, and unless every condition favors a really pretty cast, I doubt the expediency of ever casting directly at a fish where the current is such that a fly cast to one side will be swept over it. A current is an able ally, and it and the angler combined can present the fly in a far more attractive manner than can either alone.

Should the fly be again refused,* into the canoe with it as before, change to one quite different in appearance, rest the fish once more, and then tender the new fly in the same manner. This can be continued until either the angler or the fish has had enough of it, for the angler may be morally certain that the salmon has returned to and will remain at the place from which he first rose. While it is quite true that a salmon will at times take a fly it has risen to, but otherwise ignored, without any interval of rest between the casts beyond such as is necessarily incidental thereto, still if such a cast does fail, it is pretty certain to change the suspicions of the fish into a settled distrust which every subsequent effort to remove will be futile. The other method, it is believed, will be found far more profitable in the long-run.

There is nothing in salmon-fishing more interesting, at least to me, than a direct issue of this kind. The capture of no other fish of anything like its size gives the pleas-

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* See p. 101, *et seq.*

ure of one which is the successful result of such a contest, since the angler may regard it as due to his own skill, and as unalloyed by any mere fluke of fortune. Should, however, half or three quarters of an hour be thus spent in vain,—offering each fly but once, and every time with an interval of rest between,—he may as well give it up and fish the pool down to its end. Then, if nothing has been taken, and after the lapse of an hour or so, if the old locality be approached with the greatest caution, a different issue will often result.

Sometimes a wake like that of a steamboat will follow the fly, though no fish be visible. It is a sure indication of the presence of a salmon, and a quite reliable symptom from which to infer its state of mind. Either the fly is too large, or too conspicuous, or the fish has seen the angler or his rod. In any event, it is safe to conclude that mistrust governs its conduct. Then let the angler sit if he has been standing, change his fly to a smaller one of the same kind, cast in the direction and with the same length of line as before, and work his rod as near the water as is conveniently possible. It is not always easy to induce better conduct on the part of a salmon which has thus misbehaved; still that it may sometimes be done justifies the effort.

Though the normal condition of the salmon is not one of such chronic distrust as that of the trout, yet it will do no harm to act as though such was the case, and as though the rule was the exception and the exception was the rule. The best fish are the most wary, and he who best disguises the connection between his fly and his leader, and who keeps himself and his rod most out of sight, will be the most successful.

After a salmon is fastened, though its play is horse-play—yes, wild-horse-play—compared to that of a trout, the skilled trout-fisherman will feel no apprehension that the struggle will eventuate in his disfavor. It is not till taught by the logic of events that he learns that one is never sure of a salmon until it has been knocked on the head. When a trout takes a fly it is usually in earnest, and, if the angler is prompt to respond, a good solid hold for the hook is generally secured. It seems to me that this is nothing nearly so likely to be the case in salmon-fishing. The hold of the hook is often by but a mere shred of skin, and he who assumes that his lien on each fish depends upon a no more secure tenure will find his profit therein.

The same patient skill and the very same tactics that worry the stanchest trout to exhaustion, will conquer the largest salmon. More time will be required, and more promptness, coolness, and resolution, but the process is the same.

Two defences are almost as common to the salmon as the fins on their back, which trout employ but sparingly. They jump and they "jig" with an energy that leaves nothing to be desired—except that they will stop.

A notion prevails that when a fish jumps from the water it may fall on the leader and part it unless the line is slacked—indeed some claim this to be the very object of the manœuvre. I am quite at a loss to see how this miracle is to be performed. Should a man rigidly secure one end of a rope long enough to reach the ground, and tie the other around his waist, and should he then jump from a window, by what conceivable gyration conducted

in mid-air can he part the rope? To break a rope, or a leader, action and reaction—a pull and a rigid resistance to pull against—are equally necessary.

Again, the voice of authority is almost a unit in asserting, if not that the leap of the salmon is an effort to strike the leader with its tail, at all events that if it does succeed in so striking the leader it will surely be broken. Though this is not absurd upon its face like the other, still I am by no means convinced that it is much more likely to happen. By no preliminary remarks does the salmon advise the angler that it is about to spring into the air. The whole performance is begun and ended so quickly that it is difficult to say just what does take place. But I have never been able to see a salmon slash its tail about when in the air, in a manner which would imperil a leader in the slightest degree. The supreme effort is that which impels it into the air. After that the motion of its tail is within very narrow limits when measured from side to side. Certainly a line more or less submerged in water, with a curve already in it from the motion of the fish or the current, and backed by a flexible rod, can stand being pushed aside a few inches without any great danger to its integrity.

As far as I know, the authorities all advise—nay insist—that when a salmon jumps the tip of the rod should be lowered or the leader will be broken. That the line is thus slackened near the fish so that it must attack a loose rather than a tight line, is the theory as I understand it.

I disagree with this, not only for the reasons already given, but for others as well. Between the angler and the fish intervenes the current, always greedy for slack line. The leap of a salmon is begun and ended in less than two

seconds by the watch. Such slack as the lowering of the rod may give is at once appropriated by the current, and whatever share the fish may gain must first be won from the current. This takes time. We do not fish by electricity—at least not yet.

In short, unless the fish is close at hand, I cannot see how any demonstration that the angler can make by lowering the tip of his rod after the leap of the salmon has begun, can by any possibility be transmitted to the scene of action in time to affect the result in the slightest degree.

The cardinal rule for playing fish of all kinds to a successful issue is—*keep a tight line;* nor can I regard the leap of a salmon as justifying a departure from this rule. For a long time it has been my practice to do absolutely nothing under such circumstances, except to look on and admire, unless the fish is very near—say twenty yards or less. Then I sometimes do lower the rod a little—not because I fear the fish will fall on the leader or break it with its tail, but simply because it may require more line to reach the place where it regains the water, and as the demand is sudden it may be well to aid the click a little. In so doing either I have been singularly fortunate, or I am justly entitled to claim that the fallacy of the time-honored theory and practice has been demonstrated.

Of all the performances of the salmon which the angler must encounter, none demoralizes me like "jigging." I am not aware that it is so especially dangerous, but its moral effect is immense all the same. For every other move of the salmon the angler has an active response, but against this passive endurance is his only

resource. How it is done I have never been able satisfactorily to determine, but it feels exactly as though some one was giving a series of short heavy jerks to the line at intervals of three or four seconds apart. This may continue for a minute or more without a break. Sometimes I have thought it was caused by the fish opening and then closing its mouth with a sudden emphasis—gasping, so to speak. Again I have attributed it to its swinging its head from side to side. It occurs not when the fish is running, but when it sulks—when it sticks to the bottom as though it was glued there, and defies every effort of the angler to move it. Under these circumstances how promptly does the first jig paralyze the angler's efforts! So sudden, so powerful, so unlike anything in the ordinary course of procedure is it; so well calculated to break the salmon's neck, and stave the angler's tackle all to pieces does it seem, that the aggressive is at once abandoned for the timid defensive, and doubt and anxiety rule the hour.

Again and again has Uncle Remus's story of the Terrapin come into my mind when so engaged.

"'What ails yer now, Brer Terrapin?' says Brer Fox, sezee.

"'Tuck a walk de udder day, en man came along an sot de fiel afire. Lor, Brer Fox, you dunner wat trubble is,' sez Brer Terrapin, sezee.

"'How you git out de fire, Brer Terrapin?' sez Brer Fox, sezee.

"'Sot en tuck it, Brer Fox,' sez Brer Terrapin; 'sot en tuck it.'"

When a salmon jigs, I can recommend no other or better course than to follow the example of "Brer Terrapin."

Perhaps what remains to be said may be best presented in narrative form, since a recapitulation of the points already given may be included, and the whole process of taking a salmon may be described as a unit. Though some of the events here combined really occurred on different occasions, still the tale is true to nature in every particular, and no pains shall be spared to make it typical —indeed that it might really be typical is the sole reason why it is not confined to any one single experience in its entirety.

With Tom, the presiding genius, in the stern, the angler in the middle, and Peter in the bow, the canoe is anchored at the head of a "salmon-pool." The water is from three to six feet deep, clear as crystal, and flowing at the rate of perhaps three miles an hour over a clean stony and gravelly bottom. On the right, as the angler faces down stream, the bank is perhaps a hundred feet distant, while on the other side an unbroken expanse of more or less rapid, and in places deeper water, extends to an island a quarter of a mile distant. A heavy rapid, with waves about two feet high, terminates the pool below, while above the water differs but little from that of the "pool" itself.

Again and again has the canoe been dropped down with the current to afford the angler a fresh field upon which he may display his fly, but without result. At last, "when he least expects it most," the water boils in the neighborhood of his "Silver Doctcr," his heart gives a bound, and then seems to stop its action, for the fly is untouched. For a few seconds he moves the fly in the subsiding swirl, hoping the fish may turn and take it, but

hoping in vain. The line is then drawn through the rings—not reeled in—the slack falling on the bottom of the canoe, until the fly is regained.*

"A fine fish," says Tom, with a disappointed air; "a fine fish altogether—altogether a fine fish," for repetition is an Indian's idea of rhetorical emphasis. "Now we rest him little bit—give him little fly, p'raps we get him anyhow."

Out comes the watch, and five minutes, each seemingly of abnormal length, are allowed to elapse. Then the angler begins again, cast following cast over barren water, until the slack line is all out, and the exact range of the rise is again in hand. Then follows a cast about twenty feet to one side of the appointed spot, and a smaller "Silver Doctor" careers in a most appetizing manner across the pool, passing in its orbit over the place where the rise occurred.

The fish does not take it, though he acknowledges its presence, as the disturbed state of the water shows. In with the fly, rest him five minutes more; and try him with a "Jock Scott." He will not take it. Rest him again, and try a "Black Dose." It is in vain. We fish over him, as if he did not exist, and finish off the pool. It has been covered to its very foot without result, and three quarters of an hour or more have elapsed. Then, making a wide circuit, we anchor well above where we had the rise, and casting but once to each side with a given length of line, we gradually work down till our old antagonist is within reach.

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* More than one fly is seldom used in Salmon-fishing on this side of the Atlantic.

The fly sweeps over him, he rolls, he seizes it, and bears it downward with him. A few yards of line draw slowly from the reel, to the free action of which no impediment is offered. The rod is raised to meet the demonstration that we know, though he seems so indifferent now, will not be long postponed. The anchor is at once lifted, and the canoe is brought in close against the bank.

All is suspense—what is he about to do? for so far he has acted as though the fly had been quite forgotten. The inexperienced may wonder at his apparent apathy, but he who has been there before feels as though the heavens were about to fall, and waits for them to come. It comes; slowly the reel speaks—faster—faster—the handle becomes but a blur of light, and the voice of the click rises to a scream. The line melts away from the reel like salt in water, and the coil that was nearly four inches in diameter is now three—two—one—will he never stop? "Go for him, Tom—go for him, or the beggar will break us!" And the canoe starts in pursuit with all the speed two powerful paddles can impart.

When scarcely ten yards out of the hundred and twenty-four remain in reserve, away across the river a fragment of silver, apparently about a foot long, soars into the air, and falls back into the water with a splash. The line ceases to be withdrawn, and, taking immediate advantage of the possibility, it is recovered as rapidly as the handle of the reel can be manipulated, yet with every precaution that each turn is distributed evenly and solidly on the spool. For this is but the overture of the opera, so to speak, and again and again will the line be snatched from us until almost the bare axle of the reel appears.

Thus two thirds of the line are recovered, and the

angler breathes again—supporting his rod, doubled up under all the strain he dares impart, with the butt against his body.

Again the fish starts—this time up stream, the reel shrieking as it parts with the line. Wild is the angler's joy, to be succeeded by doubt, and then by anxiety as the quantity of line in reserve grows less and less, and the fish seems to have no idea of stopping. A second time the canoe is forced to follow, and once more the fish concludes his run by bounding into air once—twice—thrice.

Again the line is recovered all but about thirty yards, when away he starts across the river, if possible more rabid than ever, finishing with another jump or two. The line is then recovered almost altogether, never omitting, no matter how hurriedly the act may be performed, so to distribute it upon the spool that it will be free to render again without the slightest hitch.

Then Tom says, "We will have to take him through the rapids—no landing-place here."

That the fish will take us up on some of the neighboring hills seems fully as probable, but the effort must be made. The canoe is run into an eddy, then shoved into the quick water, and down we go bounding like a cork over the waves at the mercy of the fierce current.

The fish follows quietly, as though he liked it; but no, he has changed his mind; he dashes down stream and obliquely across it with the speed of a race-horse—at least it seems so, for the whizzing line trends in that direction. But what is that? Away up above us and half across the river, a salmon bolts into the air. "Did you see that, Tom?—we'll go for that fellow when we finish with this one." How Tom laughs!—and it is not

without protracted effort that he finally forces us to believe that that was the fish we are fast to. It is so very far off, and in so different a direction from that indicated by the bending rod and the running line, that it seems impossible that it can be so, though so it is.

So the canoe drops down with the swift current, halting at times as the fish becomes very obstreperous, and then resuming its course. And the salmon follows, sometimes freely, sometimes reluctantly, and sometimes in absolute rebellion compelling us to let him have his own way for a time.

We near a landing-place. The canoe is brought to the bank, and we take to the shore with every precaution that the pressure is not slackened upon the line for an instant, and that the foot makes no slip on the smooth stones.

The fish now exhibits symptoms of discouragement, and gradually yields until he is not forty feet from the bank. But there he draws the line, and not another foot will he yield. Were he changed to one of the rocks imbedded in the bottom of the stream he could not seem more immovable. It is a case of the "sulks."

The rod, which heretofore has been kept in an approximately perpendicular plane, is now held almost horizontally that the strain may as far as possible coincide with the direction in which we wish to move the fish. The bend of the rod, however, and the tension it imparts to the line remain unchanged. We walk down below him fifteen or twenty feet. This disturbs his equilibrium. He turns his head toward the strain for a moment's respite, and instantly the implacable current sets him down and inshore. As we feel him yield we walk back from the water, thus keeping up the tension. He struggles and

regains control of himself, when we first walk toward the bank taking in the line we have gained, and then move down stream as before. Again we work below him with the same result, and again, and again. He is now not twenty feet from the bank.*

But clearly he is now of the mind that this thing has gone quite far enough, for he is as immovable as the everlasting hills. Ten—fifteen—twenty minutes pass, and it is still "pull Dick, pull Devil." Our arms now ache as though they would drop off at the elbow-joint. "Stone him, Tom—do something—I can't stand this much longer." So Tom tosses in stone after stone—none of them large and none of them thrown with violence, lest they strike and part the leader—seemingly without effect.

At last the reel begins to move. It speaks slowly at

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* At this point in the contest the angler may with profit recall that law of mechanics, which teaches that the resistance offered by the click to the withdrawal of the line varies with the diameter of the coil of line on the reel. With my own reel, for example, when this diameter is one inch, the salmon must, to gain another foot, pull three pounds; while when the fish is but thirty or forty feet from the tip, a pull of half a pound only is necessary. Sulkiness in a salmon is no more agreeable than a like manifestation in a child. When the salmon is close at hand, then, it is well to remonstrate with a little more firmness than the unaided resistance of the click will permit. This is best done by supporting the rod with one hand, and gently pinching the line above the reel with the thumb and fore-finger of the other. The pressure should but add say a pound to the resistance of the click, not check the line absolutely. The moment the salmon evinces a change of tactics, the line should be released.

Where fish run twenty pounds or over, a socket at the waist to support the butt of the rod will add greatly to the comfort of the angler during a protracted contest.

first, like the pendulum of a clock—you can count each tooth of the ratchet-wheel by the sound—then faster—faster, till again it screams, and the line wilts away upon the reel like dew before the sun.

"Quick—the canoe—the canoe," and we shamble down the bank, one eye on the fast vanishing line, and one upon the slippery path we are forced to follow. At last, at the very crisis of possible defeat, the canoe reaches us. We tumble in, and are off after a fish apparently as fresh as at the very outset.

For another half-hour we fight him from the canoe, working him down stream, he running, jumping, and sulking, until we land again on the other side of the river three-quarters of a mile below where we first took to the bank.

We again try to work him in by the same tactics, but our first effort comes to a stand at once. He begins to "jig"—a series of short, heavy, and sudden jerks fill us full with apprehension, and it is plain we must wait his pleasure still. He stops, and we begin. He begins, and we stop. At last he yields, and gradually step by step swings in toward the bank. Slowly Tom approaches, gaff in hand, no part of him in motion except his feet. The salmon is now a pretty sick fish, and again and again rolls upon his side, though recovering himself almost immediately.

He sees Tom. At once he recovers and is off again. But the pristine vigor of his rush is no longer there. He can take no more than half the line before his failing strength compels a halt. So we follow him down the bank, coaxing him in when we can, letting him go when we cannot, playing the great game of give and take.

Once more we work him in short, showing increased signs of distress. But again he sees Tom—it is wonderful how the salmon hate him—and again he is off. But we are at the end of the landing-place, and so heavy a fish could not be drawn up against the current though he should remain perfectly passive. We must take to the canoe, and try him again at the next landing-place, some half-mile farther down.

He is quite discouraged now, and does as he is bid with little remonstrance. We land again, and though he sulks some, we work him slowly in without difficulty. Tom anticipates about where he will arrive, and motionless awaits him gaff in hand. Peter hunts for a long thin stone. The exhausted fish rolls on his side, when a well-timed impulse of the rod slews him still nearer the shore and within reach. Like a flash the cruel gaff is around his backbone, he lies on the bank, the lad hammers him on the head with the stone, the scales show thirty-two pounds, and we drop the rod and sprawl out on the bank utterly exhausted, after a contest of one hour and fifty minutes.

Now that it is written I find that I have departed somewhat in this narrative from my original purpose. Though the leading features of all are more or less alike, still every capture of a salmon has its individualities. To where we made the first landing our narrative is strictly typical, and its counterpart has occurred and will occur again and again to every salmon-angler when fishing in a similar locality. There a picture, the most vivid of my recollections of salmon-fishing, rose before me, and I unconsciously drifted into describing a particular incident—the capture of my largest fish. Though every salmon

does not weigh thirty-two pounds, and though every salmon does not show such undaunted resolution for so long a time, still perhaps it will be as well to let it stand. The difference will be rather in quantity than quality, and moreover the case teaches an important supplementary lesson well worthy to be borne in mind. This fish was treated from the first as though lightly hooked. Any other course must have been fatal, since the moment it touched the bank the hook dropped from its mouth.

Such is salmon-fishing. If there is greater fun in this vale of tears I do not know it. Better fortune I cannot wish the reader, than that in sound health and with sound tackle he may in the near future fasten a forty-pounder, and bring him safely to gaff after a contest in which each party thereto has striven to the uttermost for the victory.

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